QUALITY OF RESIDENTIAL ENVIRONMENT IN BHAGALPUR CITY

DISSERTATION

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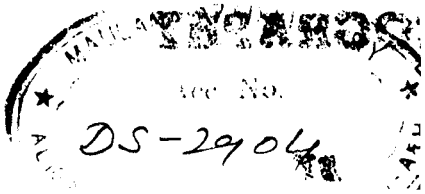

To

MY FATHER

a dedicated social worker
who hardly lived for himself

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Nigar Alam

(NIGAR ALAM)

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INTRODUCTION

I N T R O D U C T I O N

Urban environment as a subject is given increasing attention by social scientist. Sustainable development in the twenty first century will, to a large extent, depend upon how cities and towns interact with the environment. The 'Earth Summit' Agenda 21 Programme of Action will fail if the cities environmental agenda of pollution, inadequate sanitation, water supply and waste management is not addressed. The theme of the conferences HABITAT-I followed by recently held HABITAT-II is sustainable human settlements in an urbanizing world and adequate shelter for all. And it should be the primary duty of all citizens and the government to protect human beings for whom houses are required to be provided and they must be saved from all sorts of pollution diseases and malnutrition and inaccessibility to work-place. Drinking water has dominated the conferences held during last two decades, and has remained a priority issue at the HABITAT-II. The quality and quantity of water, the ease of obtaining it and removal of water wastes are important indicators of health. Investment in water and its related infrastructure is important to development as it reduces the national health bill and cuts the amount of labour lost through illness.

The world is steadily becoming more urban. India is no exception. The percentage of urban population in India has increased from 17 percent in 1950 to 25.5 percent in

1991. As per UN projection 45 percent people will live in urban areas in India by 2025 AD. Rapid population growth combined with unsustainable growth of infrastructural network has made urban areas repositories of people unable to provide themselves with the minimum needs for a decent existence. Undoubtedly the quality of life in our towns, cities and mega-cities needs improvement.

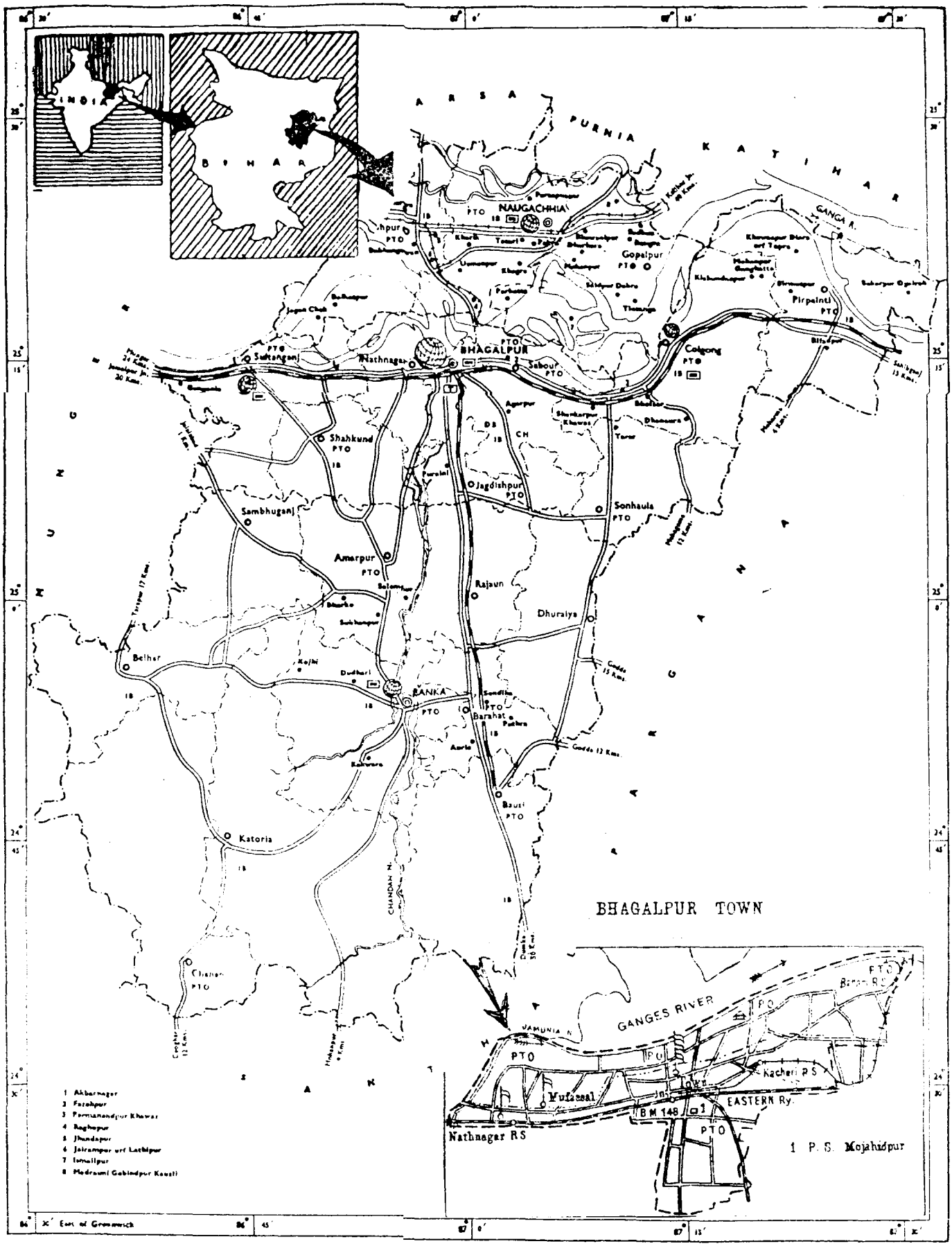
Whatever, efforts may be made to curb the growth of urban population and if the environmental conditions can not be improved for twenty two crore urban people then at least we have to provide them a minimum level of accommodation, drinking water, health facility and accessibility. Our cities and towns have grown fast with deteriorating conditions of health and habitation. Our population has doubled since independence but urban population has quadrupled in the same span of time. Hence the process and the process of development are interdependent, urbanization needs to be sectorally and spatially balanced so that the quality of life and environment is maintained.

Man live in the houses and houses in the environment establishing an inter-relationship between them. In response to judge the level of balance the author has under taken a research project on the Residential and Environmental life of Bhagalpur city, Bhagalpur a city of ancient origin in Bihar having locational priviledges and other scope is

still in a deprived state. Bhagalpur a very backward city of a backward state has been taken as a sample as far as man-made environment is concerned. And it could prove an asset in explaining the main lacuna which hinders the development of First-class town all over India, apart from the fact that the government is planning to develop this sort of town. Thus the study is designed to investigate the level of scarcity standing against the balance.

The present dissertation is a study in the conceptual aspect of the problem which will ultimately leadto the design of research project on factual grounds. Chapter I of this dissertation explores the historical processes which have generated socio-economic and demographic forces behind the foundation and developmental trend of the city. Chapter II deals with the demographic description of the city in which trend of population growth and other demographic characteristics has been explained. Chapter III is the study of intra-urban residential structure in different parts of the world as documented in the empirical analysis of various scholars. And the second part of this chapter is concerned with the multivariate analysis adopted by different researchers. Chapter IV is devoted to the recent phenomenon of 'residential environment' and the prevalence of the notion of social well-being in the writings of the post-Second World War era. Chapter V the last and concluding chapter is problem-oriented and problem solving one. In

this, general discription of city has been made which is infrastructural in nature and man required in essence. Here housing health, potable water, transpotation system and other fundamental need of the people, which play a vital role in creating urban environment has critically been observed and scarcity has clearly been revealed in a concise and conceptual manner.


INDIA
BIHAR
ARSA
PURNIA
KATIHAR
GANGA R.
NAUGACHHIA
Gopalpur
Pirpainti
Colgong
BHAGALPUR
Nathnagar
Sultanganj
Sabour
Shahkund
Jagdishpur
Sonhaula
Sambhuganj
Amarpur
Rajaun
Dhuraiya
Belhar
BANKA
Barahat
Katoria
Chanan R.
BHAGALPUR TOWN
GANGES RIVER
JAMUNIA R.
Mufassal
Kacheri P.S.
EASTERN Ry.
Nathnagar RS
1 P.S. Mojahidpur
1 Akbarnagar
2 Fatehpur
3 Permanandpur Khawas
4 Raghopur
5 Jhandapur
6 Jairampur urf Lachhipur
7 Ismailpur
8 Madrasni Gobindpur Kausli
East of Greenwich

CHAPTER - I

HISTORICAL DEVELOPMENT

* Prehistory
* Medieval Period
* Modern Period
* British Period
* Post-independent Period

CHAPTER - I

HISTORICAL DEVELOPMENT

The District of Bhagalpur is settled in the eastern Bihar, south of the river Ganga. City of Bhagalpur is the headquarter of Bhagalpur division as also of the district and sadar sub-division. The jurisdiction of the district has remained intact and it virtually remained unaffected on account of reorganisation of districts in the state. City of Bhagalpur also inhibit in the middle of the present Bhagalpur district which is bounded on the north by the river Ganga, in the south and east by Santhal Pargana and in the west by Munger district. No authentic report is available as to the origin of the name of Bhagalpur, however according to the District Gazateer of Bhagalpur, 1962, Buchanan has observed in his journal that the name have been given by the Mughal officers.

Bhagalpur shares its physical characteristics with most part of state. The district is divided by Gangas, the southern part, south of the river are comprised of the Gondwana and Gangetic alluvium. Winter is cool which lastsfrom November to February. Summer season is followed by the southwest monsoon which lasts till the end of September. Average annual rainfall is approximately 120 cm. July being the raniest month, on an average, there are 60-80 rainy days as has been observed in the last decade. March and April are driest month

of the year when the relative humidity are about 50-55 percent in the afternoon. As far as the location of the city is concerned, it lies $25^{o}7'$ north to $25^{o}22'$ north latitude, and $86^{o}40'$ east to $87^{o}20'$ east longitude.

1.1 PRE-HISTORY

According to traditions preserved in the epics and puranas the descendant of Anu the great grandson of Manu founded the Anava kingdom in the east. Afterwards this kingdom was divided among the five sons of Bali king known as Anga, Vanga, Kalinga, Pundia and Sumha. Among the kings of Anga about whom there is some reference was Lomapada, a contemporary and friend of king Dashrath of Ayodhya. His great grand son was Champa, after whom, the capital of Anga till then known as Mulini was renamed as Champa. Anga along with Magadh, first find mention in vedic literature, in the Atharveda Samhita. Budhist scripture mention Anga, among the different traditions in north India. According to a tradition, Brahmadatta the king of Anga defeated, Bhatia, the king of Magadh. But the laters son Bimbisar (C. 445 B.C.) avenged his fathers defeat and subjugated Anga. Ajatshatru, the next king of Magadh, is said to have transferred his capital to Champa. Subhadrangi, the mother of Asoka was a poor Brahmin girl of Champa who was given to Bindusar in marriage.

Anga remained a part of Magadhan empire under the Nandas, the Mauryas (324-185 B.C.), the Sungas (185-75 B.C.), and the Kanvas (75-30 B.C.). During the rule of Kanvas, King Kharavela of Kalinga invaded Magadh and Anga. The history of the next few centuries up to the coronation of Chandragupta I (in 320 AD) is rather obscure. Anga was the part of the great Gupta empire (320-455 AD). This was an epoch of great material and cultural progress. With the decline of the Guptas, the Gaud king Sasanka gained control over the area in 602 A.D. and maintained his dominion till his death in 625 AD, after which came the rule of Harsha, and Madhavgupta became the king. His son Aditya sena has left an inscription in Mander Hill indicating the installation of Narsimha or, Narhari temple by him. Huen Tsang visited Champa in the course of his travel accounts, Gopala of Palas founded Vikramsheela seat of the famous ancient university. Narayanpala's copper plates have also been found at Bhagalpur. Sena succeeded Pala afterwards.

1.2 MEDIEVAL PERIOD

This town is situated on the bank of river Ganga and is administrative headquarter of both Bhagalpur district and Bhagalpur division. The total population of the town was one lakh and fourteen thousand at the time of independence.

Dr. Buchnan Hamilton describes Bhagalpur town in W.W. Hunters 'A Statistical Account of Bengal (vol. XIV, published in 1877) are as follows :

"Historically, there is little of interest in annals of Bhagalpur till the later Muslim times. Colonel Franklin indeed has endeavoured to prove that this town is the site of ancient PALIBOTHRA of geographers as thesis principally supported by the allegation that the Chandan is the river presenting many of the characteristics of the Erinabos on the bank of which Ptolemy states that Palibothra stood.

It is certain that Palibothra must have been situated somewhere in Bihar and near the Gangas, but there seems to be insufficient reason to doubt the common identification with Patna city.

The town of Bhagalpur is occassionally mentioned when Akbar's troops marched through it, while invading Bengal in AD 1573 and 1575. In the second Afghan war, Man Singh made Bhagalpur the rendezvous of all the Bihar contingents which in AD 1591 were sent thence over Chutianagpur to Burdwan, where they meet the Bengal levies to invade Orissa. In the Ain-e-Akbari, that is the third volume of Akbarnama, Bhagalpur is mentioned as the chief town of Bengal Pargana which was assessed at approximately 47 lakh dams equal, at the rate of 40 dams

to one Akbarshahi rupee to 1 lakh and 17 thousand rupees. Subsequently Bhagalpur was made the seat of an Imperial Faujdar or Military Governor. We learn from Padshahnama that in AD 1639 this office was held under Shahjahan by one Atish Khan Dakhni. About the beginning of Aurangzeb's reign another seith Raziuddin hold the mansab of one hundred. He was a gentry of Bhagalpur distinguished for his eminent attainments in various sciences was a good soldier, good collector and an excellent companion. Through the influence in course of time, the ruler raised to the Ameer and received the title of Khan.

Near Bhagalpur is Champanagar where there is mausolium of a Mohammadan saint, inscription of which states that it was built in 1622 by Khwaja Ahmad Samarqandi Faujdar of Serkar Monger. Another place of interest as a Mohammadan shrine is the tomb of Pirshahjanga Shahnawaz on a hill west to the station, below which a very fine tank has been excavated. The heretical sect of Oswal were settled in the western Mohallas of the town. Jain religion prevailed during Karana Rajas and there were, two remarkable places of worship - one erected by the great banker Jagat Seth, is a squire building two storeys high. Each storey consists of an apartment surrounded by a narrow open galary and the upper storey is covered by a dome. In the lower apartment one small images of white marble, representing the twenty

four tirthankar of the Jain religion, setting cross-leged and resembling the images worshipped by the Buddhists. Many pilgrims especially from Marwar in the west of India are said to frequent to these temples . The other place of worship, belonging to the Jain is at Kabeerpur at not great distance from Champanagar. In the neighbourhood it is called Vishnu Paduka or the feet of Vishnu; but this name is used only by vulgar. And both the Brahmins and Jains agree that the object of worship here represent the feet of the twenty four dieties of Jains. The emblem of the diety is very rudely carved and represents the human feet.

1.3 MODERN PERIOD

Modern development of Bhagalpur could be traced back, somewhere in Muslims period, especially after the invasion of Bengal during 1573-75. In the second Afghan war it became rendezvous of all Bihar contingents. But Bihar including Bhagalpur, ruled by Muslim viceroys, with their seat at Rajmahal for approximately two centuries, had fell into the hands of Britishers in 1769.

1.3.1 British Period :

When the East India Company assumed the Diwani of Bengal (1765) Bhagalpur formed, the eastern part of the Mohammadan sarkar of Monger and lay with the exception of one Purgana to the south of Gangas. At that time the country, to the south and west was so unsettled, owing

to the inroad of the hill tribes, that the exact boundaries of the district in those direction can not be determined and it was not untill 1774 that an officer was specially deputed to ascertain its limits. Till 1769 the revenue and criminal jurisdiction continued in native hand; but at the end of that year an English supervisor was appointed, who lived at Rajmahal and whose duties was to obtain a summery history of the provinces; the state produce and capacity of the land, the amount of revenues, the cases and all demands, whatsoever, which were made on the cultivators, the manner of collecting them and the gradual rise of every new import, the regulation of commerce and the administration of justice. In 1772 when the company took the management of revenue into its own hands, it was found that during the past seven years, more than five lakh of land revenue had been embezzled annually. Measures were at once taken to put the collection on a more satisfactory footing, and the Zamindars were ordered to live on their estate and attend the collection of their rents, and were imprisoned if they failed.

Captain Sherwill in his geographical and statistical report of the district of Bhagalpur (1869) mentioned "That most remarkable object in the Purgana are first the town and station of Bhagalpur. The town is a miserable struggling collection of huts extending over four miles of ground cut up and divided by fields, gardens plantations,

and numerous roads, the whole plan resembling an uninhabited forest rather than a town".

Bryne wrote the town has a lot of changes and mentioned the chief town and administrative headquarters of the district.

It appears with these two statements that in 1869, Bhagalpur was not very important, while Nathnagar and Champanagar had not only a large population but a sizeable trade and commerce. Apparently the growing importance of Nathnagar and Champanagar led to the spread of the town towards the east and Bhagalpur as Sherwill describes is consisting of huts and started developing. The location of Faujdari and Diwani Adalats in Bhagalpur accelerated the growth of Bhagalpur town and in a few decades Bhagalpur became more important than Nathnagar and Champanagar.

Population of the Town :

The population increased from 65 thousand in 1871, to 68 thousand in 1881, to 69 thousand in 1891 and to 75 thousand in 1901 of whom 70 percent were Hindus and 29 percent Musalman, while there were 333 christians and 118 Jains. The town was thriving its growth being due mainly to a great development in the export, trade and agricultural produce, which has led to the opening of second railway station. It contained the usual criminal

revenue and civil-courts, a police training school, Central jail, Arts College, Dispensaries and Lady Dufferin Hospital. The Jublee College built by Tej Narayan Babu a zamindar of the town in 1887 was raised to the first grade in 1890, when law classes were opened. The college had a fine building and a strong staff of Professors, a hostel of boarders was also attached to it.

Bhagalpur was constituted a municipalty in 1864. The income during the decade ending 1901-21averaged 1.36 lakhs and the expenditure 1.15 lakhs. There were taxes on housing, water supply, vehicle, medical, road, education and so on. Town was a very healthy one, with a natural system of drainage and a filtered water supply, which was extended in 1896-97 to the suburbs of Nathnagar and Champanagar a loan of 30 lakh being advanced by the government for this purpose.

Administration :

From administrative purposes the district was divided into four sub-divisions, with headquarters at Bhagalpur, Banka, Madhepura, Supaul. The district magistrate or collector were assisted at headquarters by a staff consisting of five Deputy sub-collectors and also occassionally by a joint and Assistant Magistrate. Outlying sub-divisions were incharges of Deputy Magistrate Collectors. The civil court subordinated to the district and session judge, who was also judge of Monger were

those of three sub-judges at headquarters and of five Munsifs of whom two were stationed at Bhagalpur and one each at Banka and Madhepura, while the fifth was an additional Munsifs for Madhepura and Begusarai in Monger. It is also known that the zamindar in the hilly part of Banka subidivision enjoyed semi-independence and seldom paid any revenue at all. The welfare work of Bhagalpur and Colgong had been carried by municipal corporation. The only important work done by the Public works Department was Chandan embankment, other smaller embankments had been done by the zamindars. District contained 21 Thanas or Police-station and 10 out-posts. There were officers like Chaukidars and Daffadars. Education was very backward, less than 5 per cent of the population were literate. In 1903 there were 13 dispensaries of which 6 had accommodation for 70 patients. Vaccination was compulsory only in municipal areas.

1.3.2 Post-independence Period :

The district of Bhagalpur had comprised of a large area east of Serkar Munger and approximately south of the Gangas during the rule of East India Company. Santhal Pargana was separated in 1856 as a district thus the Bhagalpur, south of Ganga has greatly been reduced. In the year 1954, the entire area, north of Ganga with the exception of Bihpur, Navgachchia and Gopalpur was constituted into a new Saharsa district. Present Bhagalpur

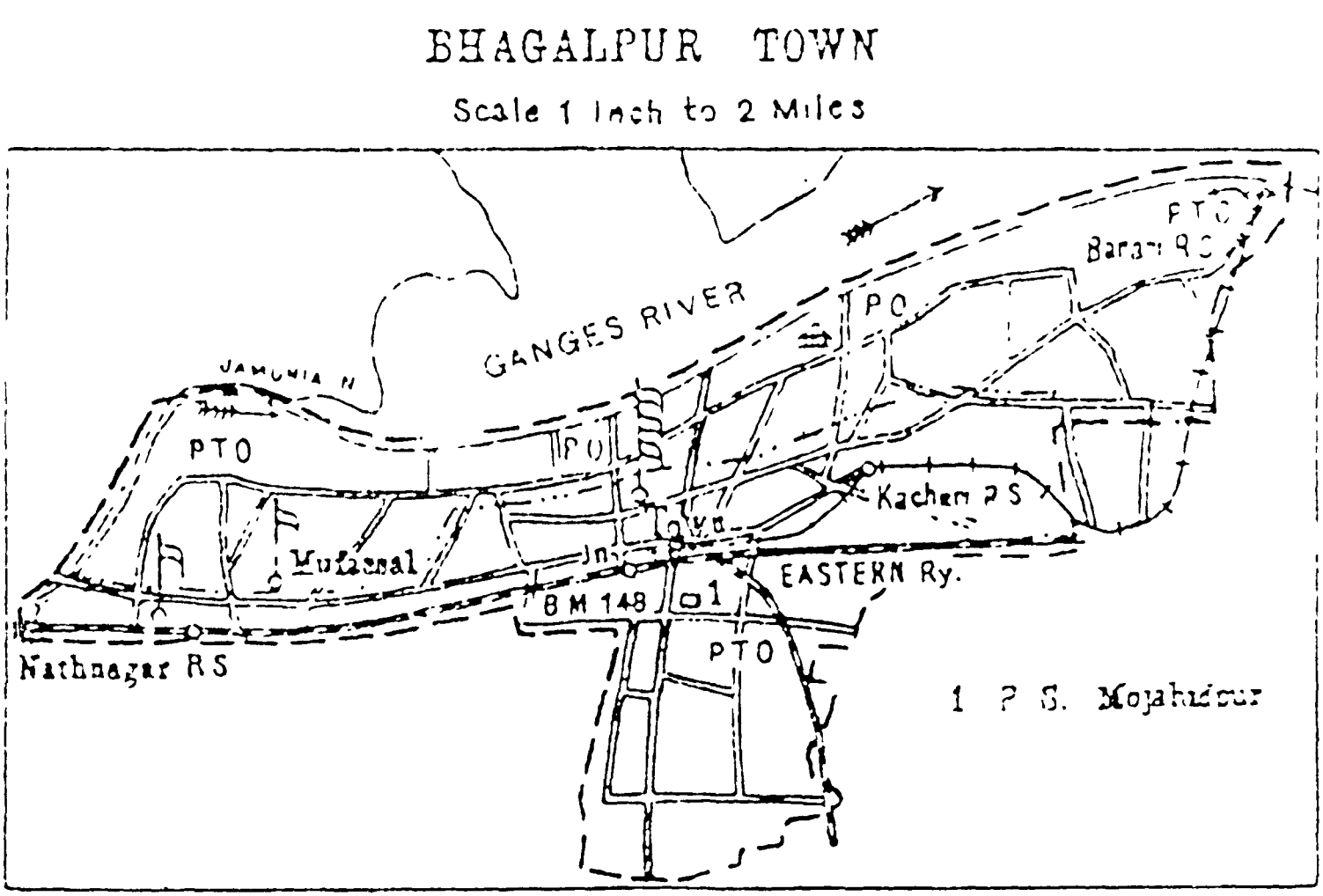


Fig. 1. Bhagalpur Town at the time of Independence.

is constituted by three sub-divisions viz. Bhagalpur Sadar, Banka and Navgachchia consisting of 21 community Development Blocks-cum-Anchals. The district of Bhagalpur is bounded on the north, by Katihar, Purnia and Khagaria district, on the east and south by Santhalpargana and on the west by the Munger district.

Bhagalpur city is not new, it has got the status of municipalty in 1864 and since then its growth is continuous and at last it became corporation in 1981. Areal extent of Bhagalpur Corporation is 30.61 square kilometer inhibiting 255 thousand people in 1991. Municipal boundry of the corporation in the east is the metre guage railway-line to Barari, Champanala bridge in the west, radio-station in the south and the river Ganga in the north. The city of Bhagalpur is presently constituted by 37 wards and 15 slum areas.

Bhagalpur, being the headquarter of the administrative division of the district a large number of offices are located here including Commissioner's office, District Magistrate, Executive and Superintendent Engineers, Registrar and Income Tax Offices. There is an established University, Medical College, Engineering College, Law College, Agricultural College and so many other colleges and training institutions. For historical importance the town has an ancient Burhanath temple on the

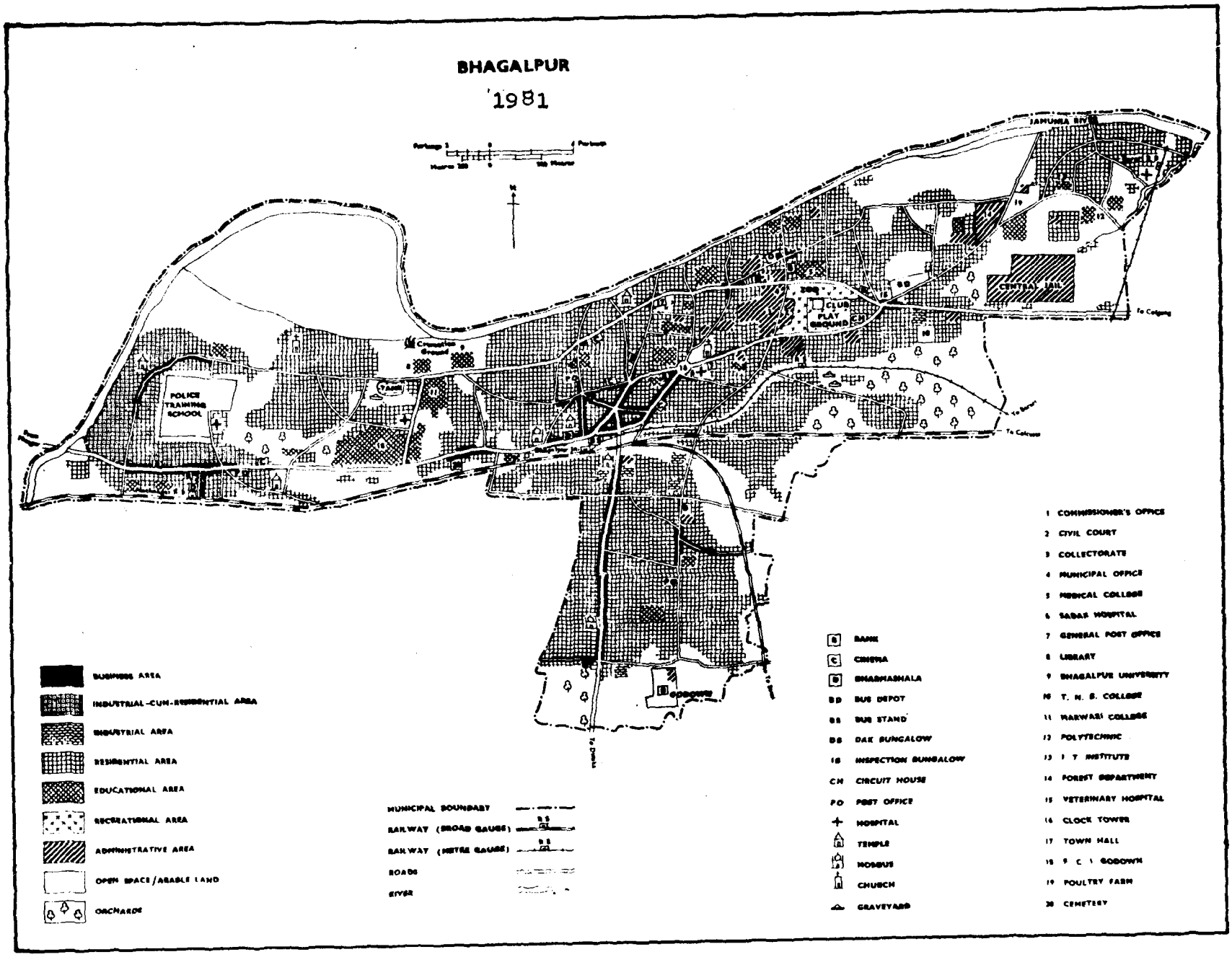

BHAGALPUR
1981
JAHNUMA RIVER
POLICE TRAINING SCHOOL
CLUB PLAY GROUND
CENTRAL JAIL
To Colgong
To Banka
To Calcutta
To Dumka
BUSINESS AREA
INDUSTRIAL-CUM-RESIDENTIAL AREA
INDUSTRIAL AREA
RESIDENTIAL AREA
EDUCATIONAL AREA
RECREATIONAL AREA
ADMINISTRATIVE AREA
OPEN SPACE/ARABLE LAND
ORCHARDS
MUNICIPAL BOUNDARY
RAILWAY (BROAD GAUGE)
RAILWAY (METRE GAUGE)
ROADS
RIVER
BANK
CINEMA
DHARMASHALA
BD BUS DEPOT
BS BUS STAND
DB DAK BUNGALOW
IB INSPECTION BUNGALOW
CH CIRCUIT HOUSE
PO POST OFFICE
HOSPITAL
TEMPLE
MOSQUE
CHURCH
GRAVEYARD
1 COMMISSIONER'S OFFICE
2 CIVIL COURT
3 COLLECTORATE
4 MUNICIPAL OFFICE
5 MEDICAL COLLEGE
6 SADAR HOSPITAL
7 GENERAL POST OFFICE
8 LIBRARY
9 BHAGALPUR UNIVERSITY
10 T. N. B. COLLEGE
11 MARWARI COLLEGE
12 POLYTECHNIC
13 I T INSTITUTE
14 FOREST DEPARTMENT
15 VETERINARY HOSPITAL
16 CLOCK TOWER
17 TOWN HALL
18 F C I GODOWN
19 POULTRY FARM
20 CEMETERY

Fig. 2

bank of the river Ganga, in Jogsar Mohalla Jain Mandir at Champanagar, Maulanchak mosque, Murtaza Saheb Dargah and Kumari Bibi tomb.

Regarding accommodation, there are circuit-house, Dak-banglow, Clubs and Dharamshalas. There is nurses training school by the side of the Sandys Compound. Transport and communication links are well netted and served by all the means of railways, roadways, waterways and airways, however air services are not yet regular. City is served by three railway station - namely Bhagalpur, Nathnagar and Sabaur. Recently a large number of state transport and private buses over-crowded the network all where and hindered the traffic flow very much. The district of Bhagalpur has been famous for its industrial potentiality since long. Tasser silk Dyeing, salt indigo, Glassware were some of the chief industries. Cloth manufacturing was one of the important industries, Besides these, there are a number of small-scale industries and some of them still continuing. A number of industries have come up in the post independence period Bhagalpur town has been the chief marketing centre in the district since long. Being headquarter of the division and the district, trade in Bhagalpur mainly consisted of the export of jute, oil-seed, foodgrains, turmeric, sugar, timber, Tasser silk, hides, bones, blankets, carpets, cotton piece, kerocene oil, petrol, salt, cement, etc. Main retail marketing centres in the district are Bhagalpur, Sabaur, Nathnagar and Jagdeshpur.

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CHAPTER - II
DEMOGRAPHIC AND ECONOMIC STRUCTURE OF BHAGALPUR CITY

Population Growth Table

Population Growth and Distribution Post Independent Period

Distribution of Population by Community

Population Characteristics During Post Independent Period

Economic Characteristics of the City

CHAPTER - II

DEMOGRAPHIC AND ECONOMIC STRUCTURE OF BHAGALPUR CITY

2.1 Population Growth-Table :

Bhagalpur a city of ancient origin is continuously growing with certain setbacks. In medieval period it became a frequently visiting site of the Mohammadan rulers. In modern times it became an administrative seat of the English rule. And in the first half of the running century population of the district as well as town have shown an intermitant growth. No doubt the population of the district must have faced many hurdles, resultantly population increased with varying intensity. Causes of this varying increase was contemporary socio-economic drawbacks, and that is why we experience a negative growth of 6.7 percent during 1911 to 1921. On the other hand district population growth rate since 1921 to 1951 is in a decreasing order over the previous decade. All these reveal some sort of scarcity and deprivation faced by the people of the period which forced the existing cluster to migrate in search of their livelihood and a better rehabilitation.

Bhagalpur became first class town with over one lakh population in 1951. From 1901 to 1921 population of the town has grown through many natural calamities and epidemics. It is interesting to point out that the town under study which grew demographically after 1921 remained more or

less a large country town till 1921. The commercial activities and demographic expansion, though quite significant in comparison to other towns of the district made no notable progress and remained stagnated. With the closure of the second decade, long drawn era of stagnation ended. Though famine were confined largely to the surrounding agrarian areas. Epidemics struck infrequently in the town, but due to expansion in medical facilities and improvement made in public health, any further negative impact on the population of the town was prevented. As par the classification of the town, according to the definition adopted at the 1961 census, Bhagalpur was yet to reach the stage of class 1 town nevertheless since 1921 there had been a phenomenal increase in its population. The population went up from 71 thousand in 1921 to over 80 thousand in 1931. Since 1921 the movement of the people from the nearby agrarian regions gradually started becoming semi-permanent in nature due to increase in commercial activities of the town, especially employment in the small-scale cottage industries. The demographic expansion reached up to 93 thousand in 1941 and it was most pronounced in 1951 when it crossed the mark of one lakh (1,14,000) with an actual increase of 21 thousand over the preceding decade. The variation percentage of the town was much more than the state figure which were 10 and 12 respectively for the corresponding decade. The town now achieved the distinction of being class 1 which was accorded to only three other towns of Bihar. The

percentage population of the town to the total population of the district rose from 7.3 in 1941 to 8 in 1951. Strength of immigrants has further contributed handsomly which were 11 thousand in 1951 than the 5,800 in the previous decade of 1941. Study reveals that a total of 43 thousand people were added in 1951 to the total population of 71 thousand of 1921.

In the light of available primary sources, we see that in the decade of 1911-21 there was decrease in the population of the town. In the decades following 1921 the growth of rural population in the district was tardier than the total population except in 1931-41. The proportion of rural to total population in the district remained almost constant during the decades earlier than 1941. Since 1941 however, this proportion shows a declining trend indicating growth of urbanisation (see table 2.1). Another indicator of the urbanisation is the concentration of people in urban areas. This is evaluated in terms of the density of the place. Bhagalpur district was having an average density of 805 persons per squire mile in 1951 which was much higher than the state average of 694 persons per square mile and more than double, the all India average of 358 persons (District Census Handbook, Bihar, Bhagalpur 1961, p-vii). Among the seventeen district of the state it was ninth in order of population density and the most densely populated region of the district was Bhagalpur city

consisted of Jagdeeshpur, Sabaur, Nathnagar and Amarpur. The city and its small satellite towns had more than 1000 persons per square mile in 1951.

One of the significant reason boosting up the rapid growth of town as well as the city after 1921 was the decline in the death rate due to advances made in the medical facilities to control the epidemics and the public health conditions.

It is evident that growth of population of the town through migration was dependent upon the general economic conditions prevailing in the town on the one hand and the push factor operating in the rural areas on the other hand. Locational factor have positive effects on the agglomerating nature of the city as we notice that after the destruction of Monger a sister town in 1932 peoples diverted towards the capital Patna in the west and towards the Bhagalpur in the east. People from north of the Ganga also travelled to the Bhagalpur as a result of push and pull factors, and so that we do not find a single city on the north side of the river Ganga which passes densely clustered population on a very fertile agricultural land. Not little important is the location of the city which is richly connected with the metropolitan, by railway, water-way and road-network.

A detailed account of the economic and commercial advancement of the town will offer an indicator to evaluate

both the process and pattern of urbanisation.

TABLE - 2.1

"Decinial Growth Rate of the Population of Town, District and State" in (000)

Years	District popula-tion	Popul. varia-tion	Distt. varia-tion	State varia-tion	Town popul.	Total varia-tion	%of Distt.
1901	1018	-	-	-	75.7	-	7.43
1911	1036	+17.3	+ 1.7	+ 3.6	75.3	-0.4	7.27
1921	966	-69.4	- 6.7	- 0.6	70.9	-4.5	7.33
1931	1114	+14.7	+15.2	+11.4	83.8	+1.3	7.52
1941	1273	+16.0	+14.3	+12.0	93.2	+9.4	7.32
1951	1429	+15.6	+12.2	+10.2	114.5	+21.3	8.10

Source : Census Report of India.

TABLE - 2.2

"Migration Table" (No. of persons born outside the town but in the district)

Years	Enumerated in the town (Actual Fig.)	Male	Female	Persons b/w the Age-group of 15-35
1911	-	-	-	-
1921	1002	702	300	0761
1931	6518	4102	2416	4321
1941	5778	3898	1880	3780
1951	10990	7830	3160	7959

Source : Census Report of India of Relevant Years.

2.2 Population Growth and Distribution During Post-Independence Period :

Worthy of interest is the fact that after independence, the town of Bhagalpur became a city from todays criteria of definition and it has crossed the mark of one lakh. When we analyse the decadal growth trend of the population, it is revealed thatthere is continuous increase in the growth rate of population except in 1981-91. During this decade growth rate declined to 3.5 percent over the previous decade of 1971-81.

In the begining of the second-half of the present century there were no city in Bihar, except Patna, Gaya and Singhbhum with a cluster of first class town population. In 1971 Ranchi and Dhanbad both the industrial, superceded Bhagalpur. And it is estimated that the town would also be left behind by Monger and Hazaribagh in 1991 and Muzzafferpur and Purnea are the new emerging challenges from the agricultural estate. So that it could be concluded that the health of the city is continuously dying. One of the striking fact is an abrupt decline in population growth during the last two decades. Bhagalpur grown at a rate of 33 percent during 1971-81 while it is 16 percent during 1981-91, which is just half of the previous decade increment, while family planning measures has been noticed negligible by the Family and Health Planning centre even in 1993 and 1994. It has alsobeenassumed by various sources

that the sudden declines in the growth rate of city population might be the bad effect of henuous communal riot spread in 1987-88. So the city, recently dying in nature, appeals for the restoration of peace, and a purified social and cultural environment.

In the first decade of the Post-independent India, population increased at a rate of 12.25 percent giving a variation of 156 thousand, when the district population reached to 1429 thousand, which has subsequently increased at a rate of 20 percent, 22percent, 25 percent and again 22 percent in the decades of 1961, 1971, 1981 and 1991 respectively. Population of the district as well as town both increased at the same rate, but the only difference associated with the city was incoming migration trends. Trend of city population Growth : show the population increase and its multiplication with the migration trend which is always uniform except in the decade of 1981-91, when a serious communal riot has totally destroyed the incoming migration trend. This riot was on such a large scale, that has approximately shattered the long established peace of the city environment, and fractured the internal economic structure of the town. And it was the only reason behind the diversification of "Pull factor". A keen examination of population do not show that the city population has intered into the third-stage of population growth, which could be indicated as a device to check the growth rate.

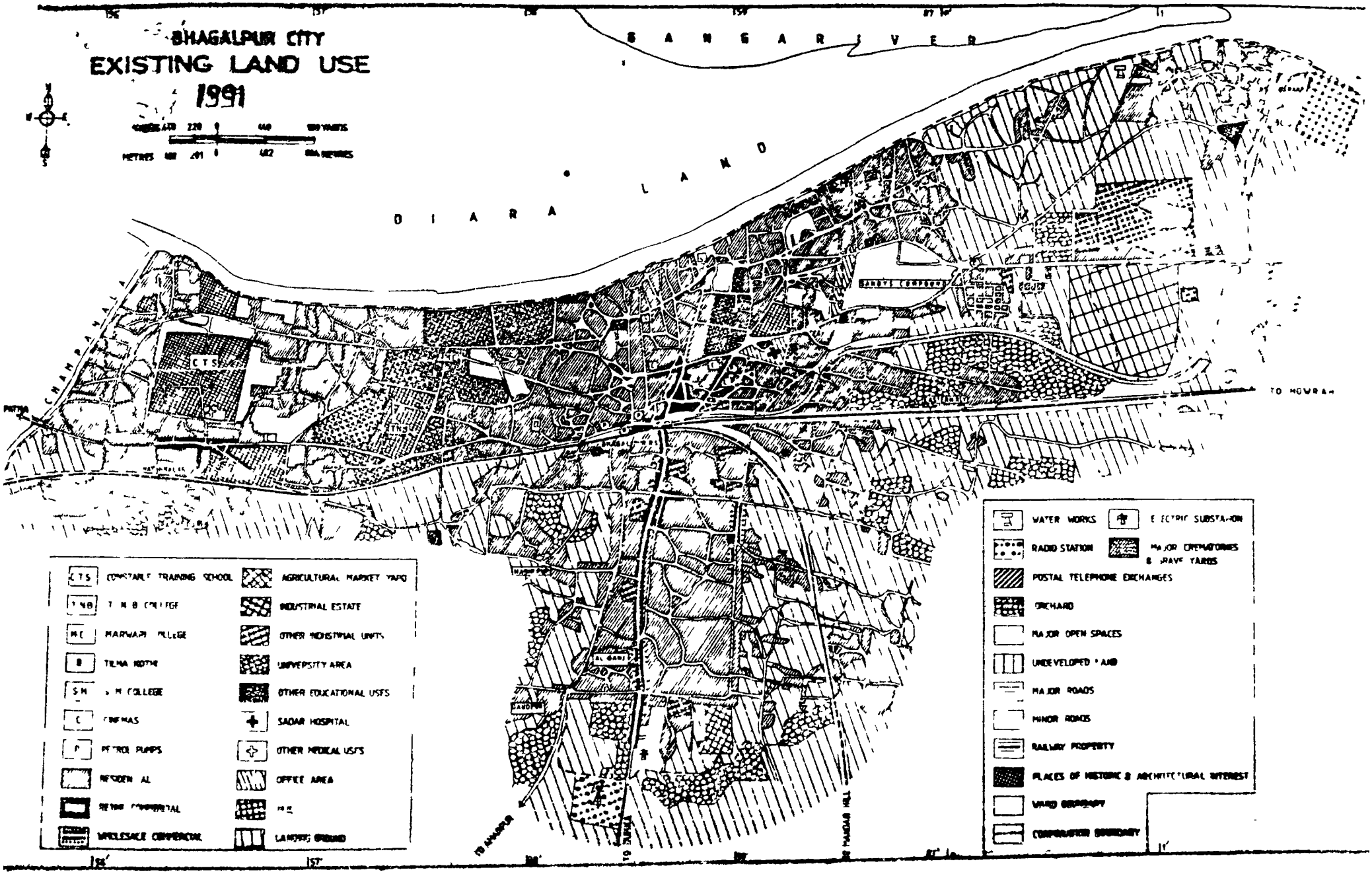
BHAGALPUR CITY
EXISTING LAND USE
1991
S A N G A R I V E R
D I A R A L A N D
CHAMPANAGAR
PATNA
TO HOWRAH
TO SAHARSA
TO MANDAR HILL
CTS
CONSTABLE TRAINING SCHOOL
T N B COLLEGE
MARWARI COLLEGE
TILKA MANJHI
S M COLLEGE
CINEMAS
PETROL PUMPS
RESIDENTIAL
RETAIL COMMERCIAL
WHOLESALE COMMERCIAL
AGRICULTURAL MARKET YARD
INDUSTRIAL ESTATE
OTHER INDUSTRIAL UNITS
UNIVERSITY AREA
OTHER EDUCATIONAL USES
SADAR HOSPITAL
OTHER MEDICAL USES
OFFICE AREA
WATER WORKS
ELECTRIC SUBSTATION
RADIO STATION
MAJOR CREMATORIES & GRAVE YARDS
POSTAL TELEPHONE EXCHANGES
ORCHARD
MAJOR OPEN SPACES
UNDEVELOPED LAND
MAJOR ROADS
MINOR ROADS
RAILWAY PROPERTY
PLACES OF HISTORIC & ARCHITECTURAL INTEREST
WARD BOUNDARY
CORPORATION BOUNDARY

Fig. 3

But in actual sense it is the outer shocked environment of the city which caused hindrances to the development of the city. However, yet Bhagalpur city is the sixth largest agglomeration in Bihar according to 1991's projected figure.

TABLE - 2.3

Post-independent : District and City Population

(Table in Thousand)

Years	Distt. Population	Variation	Growth Rate	City Population	Variation	Growth Rate	% of Distt.
1951	1429	156	12.25	114	-	-	8.0
1961	1711	282	19.74	134	23	22	7.8
1971	2091	380	22.21	180	34	28	8.1
1981	2621	530	25.36	225	45	33	8.6
1991	3198	577	22.01	262	37	16	8.0

Source : Census Report of Relevant Years.

2.3 Distribution of Population by Community :

Bhagalpur is a city which is dominated by the Hindu community since very long. Hence it had remained a seat of administrative machinery of Muslims, so they are also found in considerable number. Here percentage of Hindu population is 70 and Muslims 28-29 of the total population. Muslims are living here since medieval times. They were 25 percent during the last decade of eighteenth century.

But the migrating waves increased them to 29 percent, according to 1991's projected figure of population. After Hindus and Muslims stand Jains followed by Christians and Sikhs, constituting less than 2 percent of the total population.

Hindus :

Hindus are dominant in city as well as in the district. There were 23,500 households inhibiting 1,60,000 people approximately in 1981. A projection of population reveals that there would be 1,85,000 population of Hindus in 1991 of which 99,000 would be male and 83000 female. Sex ratio of the Hindu community is 807 which show a great difference. There are hundreds of castes among the Hindus, including scheduled caste and scheduled tribes. Among the higher castes, Bumihar or Brahmins, Rajput, and Kaiesth or Lalas are important. Apart from these Koiri, Kurmi and Yadav are in considerable number. Agarwals, Jains and Sikhs are business class community. Agarwals and Muslims are majorly confined to to the industrial and textile activities (See table 2.4 for details).

Muslims :

We have a clear account of the Muslims presence since fifteenth century in Bhagalpur city. They are the second majority, after Hindus constituting 28-29 percent of the total population of the city. There were 7500 Muslim households in 1981 inhibiting 65,000 people which would become 75,000 in 1991's census report which is yet not

available. Muslims sex ratio is 912, which is comparatively higher than the Hindus sex ratio. Muslims are also divided into various castes of Seikh, Syed, Momin, Raien, Mansoori and Kasai. Silk, and textile, industries of Bhagalpur is mainly in the hands of Momin muslims.

Others :

Jains are very old habitants of this city, and various Jains temples in different parts of the city gives a glims of ancient origin of this community in this city. They are the third community, after, Hindus and Muslims, having 125 households and 1100 population. Among the other community of the city Christian, Buddhist and Sikhs are notable. There were 120 households of Christians, 38 of the Sikhs and 2-5 of the Budhists inhibiting 500, 200 and 10 peoples respectively in 1981. Highest sex difference is found among the Sikh, because they are not the permanent settler but business mined male Sikhs stay here only. Christians are the most literate and educationist community, however they are very few in number.

Scheduled Caste and Scheduled Tribes :

Scheduled Castes and Scheduled Tribes are not more than 10 percent of the total population of the city. They are either labourers or servicemen in government jobs. There are uncountable number of castes among the scheduled caste, but only ten of them constitute 95

percent of the total scheduled caste population. There were 2800 scheduled caste households in 1981. Total population of the scheduled caste was 17 thousand constituting 7.4 percent of the total population, but it is projected that the population of scheduled caste in 1991 would become 10.4 percent, scheduled tribes were very few in number and the total number was 883 in 1981 which increased at the rate of 23 percent and became 1089 in 1991. The percentage of scheduled tribe in the city is always in decimal.

TABLE - 2.4

Communitywise Distribution of Population in Bhagalpur City

Community	Household (1981)	Persons (1981)	Persons (1991)	Sex ratio
Hindu	23566	158,000	185,000	807
Muslim	7522	65,000	75,000	912
Christian	120	500	600	990
Jain	110	1,000	1,100	905
Sikh	38	200	200	765
Budhist	2	10	12	1333
Total	31,365	225,000	260,000	-

Source : Census Report of 1981 and Projected Figure of 1991.

TABLE - 2.5

Household situation of scheduled caste and scheduled tribes

Years	Household	S.C.	Growth %	S.T.	Growth %
1981	2800	16800	7.5	1000	0.4
1991	3100	18500	10.5	1100	23.0

Source : Census Report of 1981 and 1991.

2.4 Population Characteristics During Post-Independent Period :

It is difficult to assess social composition of the migrants and different types of migration process. The factors influencing the decision to migrate are varied and complex because the migration is a selective process which affect individual or group with certain economic, social and demographic characteristics. Nevertheless one fact has clearly emerged out of our discussion and that is the demographic expansion of the town with a corresponding expansion of economic activities (Gazeteer of Bihar, Bhagalpur 1957, pp. 25-26).

Bhagalpur is famous for its silk which has been a well-known product of the town from the time immemorial. It has been a centre of flourishing trade in silk from a very early time. The silk manufacturing of the town in the first half of twentieth century it was one of the most flourishing and exchange earner, to the city. 1600

handlooms were owned by weavers who worked under the system of Finance and Order where the trading and marketing previledges were entirely in the hands of merchants middle class. Apart from this, 250 handlooms were owned by marwaris who employed the workers at their wish and had secured all rights over this business.

The Government of Bihar created as a population cum training centre, a silk institute at Nathnagar in Bhagalpur town in 1922. With the establishment of this silk institute and the keen interest of marwaris and Muslims developed the business in leaps and bonds. Though the silk manufacturing in the town still remained in its traditional form due largely to the lack of technology, it made significant progress as a small-scale industry over the years. Bhagalpur silk, by the end of 1940 became a large exchange earner. Bihar exported silk fabrics worth about Rs. 2 crores annually to a large number of foreign countries. Out of this Bihar alone exported goods worth about one crore annually. There were twenty five dealers of silk fabrics in the town by 1951. Five important among them were Ram-bansi silk mills, Abdul Qadir and Sons, Bajoria Silk mills, Bansidhar Chandi Prasad and Haji Sarafat Hussain's.

As regards the employment of the weavers and labourers, the Techno-Economic survey Report of the town

shows that the handlooms of the town employed 10,500 people whereas the power looms employed 5600 people in 1941. This is also revealed by the report that 4000 weavers were employed in tasar silk and dying industry in 1940. Another study show that 20,000 weavers were working on handlooms and 10,000 weavers on powerlooms in 1950. The number of weavers almost doubled in a decade.

As a result of a decline in the number of agricultural labourer the population of the town rose sharply from 1,14,000 in 1951 to 1,44,000 in 1961, adding an increase of 26 percent over the last decade. It was entirely due to the migration of people to the towns. It is important to point out that 30% and 28% of the total population of the town in 1951 were engaged in household industries and manufacturing process and in other services respectively. This percentage increased to 33.65 and 33.82 in 1961.

The growth of communication points helped in more ways than one in strengthening the commercial activities of the town. With the construction of new railway lines and roads its link with other commercialised towns was firmly established. In addition to this, the migration to the town became much easier than before.

Around ten PWD roads were constructed connecting Bhagalpur with its satellite towns such as Sultanganj,

Akbarnagar, Banka, Pirpatti etc. In addition to these state highway roads, construction of seven more state highway roads began in 1950. North of the Ganga four more roads were constructed between Bihpur and Naugachia. The District Board mentioned that there were 35 miles of pucca roads in Bhagalpur municipality in 1951.

North and south Bhagalpur were connected by a regular ferry service. The Northeastern Railway ran a metre gauge line from Bhagalpur to Barari Ghat on the south of the Gangas. On the other side was Mahadewpur Ghat connected by branch line to Thana Bhipur. The river being navigable, throughout the year, a regular steamer service started functioning from Calcutta to Buxar till 1957.

The town was then brought on the map of a broad gauge loop line of the Eastern Railway running from Kiul to Burdwan. The first station in the district was Gangania in the West and the last was Pirpainti in the East. Many new lines were opened later to connect the town with its important hinterland areas. Thus a branch line was opened between the town and Mandar Hill (31 miles). The town was not served by any regular air-services though it had a landing ground.

The town whose economic activities remained more or less arrested till 1921 began growing by 1931 and

drastically rose to catch up with the leading commercialised towns of the state by 1951. Its importance grew further after it was declared the administrative headquarter of the district and division comprising the district of Monghyr, Santhal Pargana, Saharsa and Bhagalpur.

A rapid effort towards the expansion of educational facilities since 1925 added in more ways than one to the growth and congregation of educated community in the town. Soon their sprang up a number of professional, medical, engineering and other colleges in addition to many new schools. The development in all spheres of the town life was wide ranging. Educationally town achieved its position in the state. Hardly any town except the capital of Patna had so much and so educational and training centres as Bhagalpur engraves,which attracted students, doctors, and elite people's herding to the town from far distance.

In short,owing to rapid expansion of the small scale industries and infrastructural facilities with a corresponding growth in other aspects of life, the town Bhagalpur was able to develope demographically as well as commercially and educationally as one of the leading city of Bihar.

Occupational Structure of Main Workers :

No development could be traced without the development of population of any area. And development of the population

of any area. And development of the population means the development of human resource. Development of human resource is the skill, education, experience, technical and functional ability of the people. So occupational structure of any segment is regarded as the back-bone of the economic development. Description here is concerned with the functional and educational level of the main workers of Bhagalpur city. Bhagalpur city is surrounded by an agricultural stretch, where majority of the workers and labourers, who spent approximately half of their times at agricultural fields and the rest is spent in the nearby city annually and Bhagalpur stand as a pavit for them. In agricuitural fields they work laboriously for half of the year and in remaining part of the year they generally stay unemployed, so they march towards the Bhagalpur city to cash their labour. Situation of these labourers have been coined below in tabular form. Due to the inavailability of the 1991 census report an account of the data of 1981 has been quoted here. According to 1981 there were 53 thousand main workers, out of which approximately 40 thousand or three fourth of the total were other workers. Second majority were of the industriai workers and manufacturers which constitute roughly 8 thousand people or 15 percent of the total, after that comes the agricultural labourer and the cultivators. Here main attention seeking matter is the low percentage of the workers indulged in manufacturing, repair and

TABLE - 2.6

Occupation of Main Workers in Bhagalpur City (1981)

Main workers	in (000)	in %
Total worker	53.00	-
Cultivator	02.20	4
Agricultural Labourer	03.50	6
Other worker	39.40	74
Marginal workers	00.50	1
Industrial & Manufacturer	07.80	15

Source : Primary Census Abstract (1981).

service work and this shows the level of industrial development and a reduced level of population in non-agricultural sector. Percentage of labourers directly and indirectly associated with agriculture is not more than 7 percent in the city. It is other worker which constitute majority are independent in nature and remain involved in various types of activities throughout the year. Now an attempt in a tabular form has been made to show the functional classification of the population and they are as follows :

TABLE - 2.7

"Educational Level of Main Workers in the City"

Educational Level	Workers
Illiterate	35.60
Literate	7.73
Primary, educated	7.20
Middle, educated	16.66
Secondary, educated	18.00
Intermediate educated	5.00
Non.Tech. Diploma	0.50
Technical Diploma	0.66
Graduate	5.00
Post-Graduate	2.06
Engineering	0.30
Medicine	0.30
Agr. and Dairying	0.08
Veterinary	-
Teaching	0.53

Source : Census Report of 1981, Bihar Series.

Above table clearly shows that the number of technicians and diploma holders are less than the graduate and post-graduate. It again clearifies that the city as a whole is non-industrial and non-commercial. However bulk of the labourers are illiterate constituting 36 percent of the total clearly reveal the agricultural nature of

Bhagalpur region. And it seems that the same number of workers cluster are middle class and matriculate, are engaged in various activities. From a keen observation of above data it can be calculated that the great bulk of population is non-professionally and non-technically educated, and the number or percentage of matriculate, intermediate, graduate and post-graduate are all higher. Thus it can be extracted that the main intension of education is not value-oriented, but just for an image in the society. On the other hand, it also may happen that the educational infrastructure for technical and professional education is inadequate.

2.5 Economic Characteristics of the City :

The main occupation of the people of Bhagalpur district is agriculture. The cultivators are fully conscious of the beneficial effects of rotation of crops. Rice is far and away the most important crop of the district. It covers the largest proportion of the gross area sown. Wheat is the main Rabi crop, Maize forms another important cereal and an item of food among the poor masses. Sugarcane is the most important non-food crop of the district. The next important non-food crop are oil seeds. But all these things can give only economic structure of Bhagalpur district rather than the Bhagalpur city. So now here an account of the economic elements in urban area especially Bhagalpur municipal area

is described in brief.

(i) Fisheries :

The large number of river streams low-lying fields where water accumulates in the rainy season, ponds and marshes indicate a rich potential for pisciculture. Certain portions of the bed of Ganga near Bhagalpur are particularly noted for a large variety of spawn. A large number of tanks are kept reserve for rearing fish. There are big traders who directly import or export fish. Quite a large quantity of fish is received in Bhagalpur market every day from the other side of Gangas mostly from Katihar and Khagaria. In Bhagalpur town fish brought from different parts of the country are sent to the wholesale fish market at Sujaganj. From this market fish are sent to the retailers on auction basis. Particular kind of fishes such as Hilsa and Bhetki, etc. and lobsters packed in ice are imported from Calcutta. Fresh water fish such as Rohu and Katla are sent out from Bhagalpur to Calcutta.

(ii) Industrialisation :

Bhagalpur has been famous for its industrial potentiality since long. Tassar silk, Dyeing, Salt, Indigo, Glassware are some of the chief industries. Cloth manufacture was one of the important industries. Besides there are a number of small-scale industries and some of them are still continuing. A number of industries have come up in the post independence period. Among the medium

industrial establishments, Government Silk Institute Nathnagar and Sheo Mills Co. Private Ltd., are important. Among the household industries which play an important role in the economy of the district, handloom industry find an important place in the city as well as in the Bhagalpur district. Dairying pottery making and manufacture of materials from cork bamboo, cane, leaves etc. are quite significant. There is hardly any large scale and middle scale industrial establishment in the city. But small scale industries are great in number. According to 1991 there were 116 tiny industries and 74 sculpturing industries in the district out of which 30% were concentrated in Bhagalpur city. There were three mineral based, three chemical based six general engineering, eight animal based industries and ten forest based industries in the city of Bhagalpur. Apart from all the above mentioned, as far as the importance of Bhagalpur in outer industrial environment is concerned it is famous for its Silk Cloth production since very begining. And it has produced 22 lakh square meter of silk in 1991. This silk is of export quality. In 1992-93 a bulk valuing 1700 lakh has been exported to many developed countries like USA, Germany, France, Hongkong, Austria, Korea and Ugoslavia. There are 15 silk exporter enterpreneurs. Bulk of Bhagalpurs silk produced come in the market after they get approved by the Delhis and Calcuttas industrialists.

But most of them are still marked by the Bhagalpur. In Bhagalpur, there were approximately 5000 electrified spinners in 1991.

Apart from them there are many saw mills, shoe-making, printing woollen goods, drugs and pharmaceuticals, candle manufacturing and plastic goods manufacturing units.

(iii) Trade and Commerce :

The position of Bhagalpur on the map of Bihar has a particular importance for trade and commerce. It is extremely well located and commands an extensive river front. It has an adequate railway system supported by roadways. A portion of Bhagalpur district lies on the north of the river Ganga and grows luxuriant maize and other crops. Bhagalpur has also been in close contact with Nepal through Purnia district. Trade in Bhagalpur district consist mainly of export of jute, oil seeds, food-grains, sugar, timber, tasar-silk, hides, bones, buffalos and cows, handloom product blanket and carpets. There are mainly three commodities viz. cloth, grains and turmeric arranged according to importance in which wholesale business is carried on in the district. Bhagalpur town has been the chief marketing centre in the district since long being the headquarter of the division and the district as well. It has the advantage of all the modes of communication. The main retail marketing centres in the

district are Bhagalpur, Sabour, Nathnagar, Jagdeeshpur in the city and Sultanganj, Naugachchia, Colgong, Banka and Bihpur outside the city and in the district. At all these places retail shops of almost all the commodities locally consumed are found. Among retail trade largest number shops are of grocery group.

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CHAPTER - III

URBAN RESIDENTIAL STRUCTURE

* Residential Patterns
* The Western Cities
* The Latin American Cities
* The South Asian Cities
* Multivariate Analysis
* Socio-economic Status
* Family Status
* Ethnic Status
* Other Dimension
* Variables Selected

CHAPTER - III

URBAN RESIDENTIAL STRUCTURE

3.1 Residential Patterns :

The urban community is neither an undifferentiated mass nor a haphazard collection of buildings and people. In the residential differentiation of the city the urban fabric comes to resemble a 'mosaic of social worlds'.[1] Similar populations cluster together and come to characterize their areas. In the course of time every sector and quarter of the city takes on something of the character and qualities of its inhabitants. Each separate part of the city is inevitably stained with the peculiar sentiments of its population. The effect of this is to convert what was at first a mere geographical expression into a neighbourhood, that is to say, a locality with sentiments, traditions and a history of its own.[2]

The residential differentiation of the urban population takes place in terms of many attributes and in many ways. Almost any criterion which can be used for differentiating individuals and groups may become the basis for their physical separation. The process of separation may be accomplished through a variety of sanctions, through a voluntary aggregation designed as a defence against unfamiliar ideas or customs or as an

escape from persecution and discrimination, and through a selection of market forces.[3]

This residential differentiation and the resulting segregation of populations serve many purposes. Physical isolation symbolizes social isolation and decreases the chances of undesirable and potentially embarrassing contact. Furthermore, segregation may provide a means of group support of in the face of a hostile environment and it may even lead to administrative efficiency. For whatever reason, residential differentiation characterizes both the pre-industrial and the industrial city, both the laissez-faire and the planned, both the capitalist and the socialist. The physical isolation of differing populations seems an inevitable concomitant of 'urbanism as a way of life'.[4]

The realisation of physical separation and socio-economic segregation of populations in urbanised areas has led many scholars from diverse fields to explore and interpret the patterns and processes of intra-urban residential structure. Out of this active interest several detailed empirical studies have come about. These studies have contributed much to the understanding of residential structure of cities in different parts of the world. In the following paragraphs, an attempt is made to summarise some important generalisations about the residential structure in different regions of the world.

3.1.1 The Western Cities

The evolution of the western city and typical residential pattern therein is generally held as an outcome of changing modes of production and distribution. E. Jones points out that revival of urbanization in medieval Europe owed largely to the increase in the agricultural productivity through improvements in agricultural practices. As a result of this, "towns reappeared as more vital centres of exchange, foci for the agricultural surplus, collecting centres for local areas, and points from which services were distributed".[5] Latter, this process kept going on the basis of improvements in transportation, the opening of new lands and new trade routes, and, above all, the rise in productive activity, first in highly organised handicraft and eventually in mass production in factories through the use of inanimate power. This transformation thus achieved in the nineteenth century was the true urban revolution, for it meant not only the rise of a few scattered towns and cities but the appearance of genuine urbanization, in the sense that a substantial portion of the population lived in town and cities.[6]

Thus unlike the oriental city, the western city shows marked impact of economic and consequent social structural changes. This aspect of the western city is consistent throughout its history and characterises it as a dynamic organism constantly in process of evolution.

A number of studies, antecedenting from the nineteenth century studies of London by Booth upto recent studies by scholars on both sides of the Atlantic, have attempted to explain and interpret residential pattern in the Western cities. On the basis of these studies residential pattern may be recognised and described with reference to city structure, which exhibit distinct zones. Most of these studies emphasise the central zone of the city as being ecologically and geographically most important.

The Central zone is the hub of the city and includes the older town and the pre-modern extensions. In it there is the maximum 'friction of space', for it lies at the nexus of communications. All services requiring central locations compete for accommodation in the central zone, with consequent vertical and lateral building expansion and great congestion of traffic. It includes the retail, wholesale, administrative, commercial and business districts; market, hotels, residential enclaves for both the elite and the poor; and large public buildings that cater for the community as a whole; and railways goods and passenger terminals. Its vertical expansion reaches the extreme in the down-town skyscraper district of the American city. The same trend is becoming increasingly conspicuous in Western Europe, where the skyscraper is now an established feature of the largest cities.[7]

The Middle zone was built mainly during the second half of the nineteenth century and early twentieth century. During this period most of the building were erected by private enterprise and there were few restrictions on the density or type of building. This middle zone is mainly 'residential' but contains numerous scattered small factories. It also contains the sites of early industrial development concentrated on the flat, low-lying land near the river or canal, beside the railway tracks, and around the goods and railway station. These non-residential areas divide the zone in to well-defined residential sectors. Much of this zone is usually in a state of deterioration. It is an area of high-residential densities. It contains the main areas of urban blight and houses most of the immigrant and low-income groups. These are what are called the 'grey areas' that are ripe for demolition, and present in their future reconstruction a major planning problem.[8]

The Outer zone is mainly a residential zone which forms the inner part of suburbia. Its settlement began by the outward movement of pioneer high-class residential zone. The main developments in this zone took place after world war I and has continued to this day so that the area is now fully occupied. It is an area of low-density residential property with plenty of open space,

public parks, etc. The older residences have often been transformed and their large lots subdivided. These open spaces serve to divide the residential areas into more or less clearly defined sectors. Residence may be widely scattered in a scenic countryside with naturally winding streets or along a lake shore. Many handsome mansions were built here by the wealthy and are now in process of being converted and their grounds built on as residential expansion proceeds outwards. Many of these mansions are also used by business firms, clubs, etc. in both the European and American cities. Thus the layout and growth of this zone varies very widely according to physical build and the mode of expansion. These areas were generally developed in the last seventy-five years as good-class residential districts.[9]

The Urban fringe is the outer suburban zone or, as it is sometimes called, the 'rural-urban fringe'. It generally lies beyond the city administrative limits and is simply a continuation of the same features of development and aspect of what are described above as the outer zone. It is a wide rural area into which residential development is intruding and new industrial sites and other urban uses are in process of development along its main lines of communication, often clustered around existing villages and small towns.[10]

These broader outlines of intra-urban residential pattern in the west as outlined above are widely accepted generalisations. These patterns suggest a consistence in the process of outward zonal (concentric) or sectoral movements of high-class residential areas from the city center as hypothesised by Burgess and Hoyt, respectively. But a comparatively recent and detailed study of central cities and suburbs of United States by Schnore has suggested six types of intra-urban residential patterns in western cities:[11]

1. A 'reverse Burgess' with high status groups concentrated in the central city and low-status in the suburbs.
2. A similar type to the first, except that the lowest-status groups are more evenly distributed between central city and suburb.
3. An intermediate pattern, typical of the largest number of metropolitan areas, which has the highest- and lowest-status groups concentrated in the central, and the 'middle-classes' in the suburbs.
4. An 'almost Burgess' pattern, deviating from the next type only in the central city concentration of the very highest- status groups.

5. The 'Burgess' pattern of low-status groups over-represented in the central city and high-status groups in the suburbs.

6. Another 'almost Burgess' pattern deviating from that norm only in the relative suburbanization of the lowest-status group.

From these findings it can be concluded that all western cities do not display the same residential pattern. Rather, they show an evolutionary tendency which according to Schnore passes through a sequence from types (1) to (5).[12]

3.1.2 The Latin American Cities

The impact of societal organization of the Latin American cities is pronounced in the patterning of residential location. The most important feature of Latin American society is the clear polarization of income classes into small but wealthy elite and a large generally poor proletariate, and a virtual absence of a middle-class. This organization of Latin American society is the result of prolonged exploitation by metropolitan powers. The elite of the society in collaboration with foreign capital have a hold upon the factors of production, while the proletariate form the resource for their exploitation. As a result of the exploitative policies of the elite,

unemployment and under-employment have reached the enormous proportions in the Latin American economics.[13] This state of affairs influences urban processes highly as seen in the large streams of rural unemployed migrants towards cities. It is against this background of low levels of development, marked polarization of income classes and high rates of under and unemployment that the residential structure in the Latin American cities shows typical features characteristic to this region of the world.

Latin American urban elites, like their contemporaries the world over, live in exclusive residential districts. In Caracas, for example, major high status districts are organized by country clubs or sport clubs, which are very particular in the choice of residents for their 'estates'. For several centuries these districts have occupied locations in the city hearts, adjacent to the seats of power, but since the technological revolution and the demographic boom reached their cities, the elite have moved away from the city centre along well defined sectoral paths. Amato has mapped this movement in Bogota in detail, showing that each period and suburb occupied is marked by a distinct architectural style, and he has also illustrated the relevance of environmental variation in the choice of the sectoral path.[14]

In his recent study of four South American capitals Bogota, Lima, Quito, and Santiago-Amato has demonstrated : in all four a clear pattern of outward movement emerges, though Lima has recently diverged from it because the sector reached the coast and Caracas, too, deviates from the true sectoral pattern because of its restricted valley site.[15] The process is very clear in the architectural fabric, and apparently the classic processes of both filtering, and invasion and succession are operating. High land values are forcing, residents away from many residential areas, replacing them with higher-density uses, and the higher-income groups are moving from their stylistically obsolescent homes to newer ones further out. Generally it is found that the status symbol values of home's architectural style has been an important element in this process. The middle-classes, in whatever small proportion they are, have in general succeeded the elite in the discarded areas. Generally, their residential location act as buffer zones between lower and upper groups.[16] The same trend is reported by March- and in case of Caracas, Baruta and El Hatillo.[17]

In Latin American cities, therefore, the sectoral residential districts of the elite are being out.flanked by middle-class developments. Having pioneered the move

to suburbia, the upper classes are moving state forward in search of better residential location.

In the absence or smallness of middle class, the next significant characteristic of residential pattern of Latin American cities is the emergence of squatter colonies.[18] Stokes has provided a useful classification of squatter colonies in Latin American cities into 'slums of hope' and 'slums of despair'.[19] Out of these two, 'slums of despair' are generally located as close to city centre as possible. Typical examples are such development on the waste land in the sides of Guaria valley in Caracas and Coastal location of La Esmerlda in San Juan.[20] These colonies pose problems to the urban economy as they comprise of illiterate rural migrant who are Chaotic and disorganized with a large proportion of workers without any productive gainful permanent occupation.

The 'slums of hope' are generally found on the outskirts of the city as examplified at 'Pampa las Cueves' North of Lima.[21] Architecturally the dwellings of these areas are planned and aesthetically pleasant. The residents of these colonies are well organized and well placed in service or business. Generally they represent that group of slums of despair which after acquiring comparatively high level of income has moved out of the city centre.[22]

The Latin American urban residential mosaic thus seems to consist of three major elements.

1. The high status sector, with abandoned homes in its inner portions occupied by low-status, recently formed or in-migrated households and, closer to the present apex of fashion, middle-class families. Its outer fringe may be taken up by new middle-class development.
2. The inner city 'slums of despair', consisting of old subdivided homes squatter settlements and in some cases, public housing.
3. An outer suburban zone of 'slums of hope', mostly organized squatter settlements.

3.1.3 The South Asian Cities

The South Asian cities in general have always been appendages to a court or an administrative centre. As a result of this predominance of administrative function and highly stratified caste structure of the society, the development of the residential pattern in this region prior to colonial era can be summarised, as Brush would put it, in three words: " protection, prestige and proximity".[23] Prior to British time the emperial cities were wholly or partly enclosed by walls, or ditches for defence. Many local rulers also fortified their chief

towns. Soldiers and retainers, merchants and craftsman crowded inside the walls for military protection and safety from robber bands. The palace, being the seat of power and wealth, became a focal point around which the people of highest status gathered for royal patronage as well as for proximity to trade. The levels of prestige and wealth became progressively higher along the thorough-fares going toward the city centre, and the least privilaged and poorest people were relegated to the back lanes and marginal areas, which sometimes were outside the city walls.[24]

The advent of foreign rule in this region is marked with the changes in the entire traditional socio-economic set up. The relevant transformations have brought changes in the urban functions from rudimentary administrative, religious, cultural, and commercial functions to somewhat organised commerce, transportation and mechanised industry. Moreover colonial interests themselves introduced new element in residential pattern. Civil Lines, Contonment towns, Railway colonies, outhouses of local aristocrats etc. developed for residential purposes away from the indigenous part of the city. Side by side in the old existing city centripetal forces continued to operate. Time and distance factors began to influence the residential development of urban centres and their lutlying

areas. Development of residential areas in the open sub-urban zone, a rather modern trend, became apparent in this period.

The structure of old residential areas remained almost static while the development of the contonment, towns represents a new approach in the architectural style of the buildings. The British built bengalow type of houses in the midst of large fenced compounds with large windows, wide varandah and portico in the front, thick walls, flat cemented floors and sloping tile roofs are the most common features of houses in the Civil Lines and Cantonments, while the railway colony is characterized by typical red brick structure.[25]

Since independence increasing education, chaos of city streets and transportation and impersonality of bureaucratic and factory jobs have tended to homogenise individual life. As an outcome of this modernisation in attitudes, development of residential pattern is reflecting more and more economic reasoning rather than mere clustering by caste and creed. Out of this functioning of these historical forces and processes described above, emerge the present residential structures of the South Asian cities, which though not typical of its, own present a little different pattern from other cities of the underdeveloped countries.[26]

The low-class residential areas have developed, more or less, in and around the central core in older parts of the cities, being the working place. Many house owners get more profit by low rents keeping as many persons or families in the houses as they can and thus making the locality look like slums due to congestion, low-class labourers, clerks, shopkeepers, hawkers, and vegetable sellers seek residence in these quarters. The houses are much older mostly ill-planned with two to three storeys. Very little importance is givento open air and cross ventilation. These residential areas are mostly mixed with other functiðns.

The middle-class residences have developed on the periphery of the central areas. People preferred these areas for their residence because of the higher land value and the absence of satisfactory housing conditions in the city centre. Middle-class residential areas differ from the low-class residences of the innerzone in that the houses in the farmer are smaller, newer and more open. Mostly the houses are double storeyed and stand on wider roads. Population and house density are comparatively lower. New developed colonies for industrial and railway workers and some other housing schemes are the new appendages to the middle-class residential areas of Indian cities.

High-class residential areas have generally developed on the outer margins of the indigenous parts and in the Civil Lines, away from the city congestion. Some of the well to-do persons prefer the open and well drained area along major thorough fares. These residences in these areas exhibit well planned modern houses, mostly single storeyed with sufficiently large green lawns within the spacious frontage.

From the above, characteristic features of the residential patterns of the South Asian cities can be summarily presented as :

1. The residential location of socially (not necessarily economically) higher status groups; around historical centre of the city.
2. the congested residential area of the central commercial centre comprising of mixed residences of the poor and well-off business community,
3. peripheral residential area populated by new middle class people; and,
4. the residential areas at the margin of the city dominated by new buildings of emerging new business and industrial elite.

3.2 MULTIVARIATE ANALYSIS

Aided by advancing computer technology, recent studies of the socio-economic structure of urban areas have been extended to include a much wider range of census characteristics. In most instance, characteristics are not choosen with the aim of specifically replicating the social area indexes, but rather of isolating those dimensions which explain as much as possible of the socio-economic differentiation within urban areas. In some cases, the dimensions also serve as a basis for classifying urban areas for more specific studies. In each case the desire is to eliminate redundencies within an intercorrelation matrix of census characteristics using multivariate statistical tools, such as linkage analysis, component analysis and factor analysis. The last two technique also allow the researcher to investigate the spatial variations in urban ecological structure by mapping the scores of census tracts on the components and or, factors.[27]

Factor analysis is the application of data describing the residential differentiation of the population, generally the urban population. It may be either blind or in connection with a specific factor hypothesis.

The typical study in factorial ecology consists of the application of extensive factor analytic techniques

to a wide range of demographic, socio-economic, and housing data generated on a sub-area frame-work. The analysis is founded on the belief that it will be possible to account for the manifold variation in neighbourhood characteristics in terms of much smaller of underlying constructs. The manifold variation of sub area population within the great majority of cities so far analysed appeared to be reflection of no more than three or four underlying dimensions of differentiation. A factor interpreted as socio-economic status or social rank appears to be effectively universal. A set of factors which index differences in the family types characteristic of the population is also generally apparent. Factors relating to the ethnic composition of the population and to its mobility characteristics occur rather less frequently, but still sufficiently often to warrant their inclusion as general differentiating dimensions. Although specific factors relating to the peculier characteristics of the population concerned may occur in any city, the basic pattern is organised around a small number of general dimensions.[28]

3.2.1. Socio-Economic Status :

Socio-economic status or social rank typically exhibits high correlations with indicant relating to the proportion of the work-force classified as professionals

or managers, the proportion of non-manual workers, the educational and income level of the population, and the proportion living in above average-value houses. Populations gaining high scores on the factor contain few professionals many manual workers, few persons with above average educational and income levels and live in below average value houses. The links between each of the indicants are strong and the factor typically accounts for the major proportion of a common factor variance exhibited in urban residential differentiation. Various secondary featurers also show high correlations with the socio-economic status factor. Some investigators notably Tryon have attempted to distinguish a secondary but closely related socio-economic dimension, socio-economic and independence which loads highly on such variables as the proportion of own account workers (Tryon Identification of Social Areas).[29] In studies of cities in the developing societies the socio-economic status factor has also shown close links to such phenomena as minority group membership, as epitomized in the concept of caste and more general differences in ways of life.[30] Whatever the external relations of the factor, however, its appearance as a unitary dimension underlying the detailed variation in occupational status, educational attainment, income and house value, seems universal and the factor has proved highly stable in a variety of comparative analysis.[31]

3.2.2 Family Status :

The second most consistent set of factors uncovered in studies of factorial ecology is composed of a variety of indicants which appear to be related to differences in the types of the family found in various neighbourhoods of the city. Typically, factors belonging to the family cluster show high correlations with indicants relating to the demographic structure of the population and with indicants relating to such family-saturated phenomena as fertility and proportion of never-married or widow women. Somewhat less consistently, high correlations occur with such variables as the proportion of women employed outside the home, the proportion of separated or divorced persons, the proportion of single family dwellings and the proportion of owner occupiers. The dominant factor appears to be one indicating differences in what Bell has termed Familism : a way of life characterised by a concern with family characteristics rather than with those relating to careers or consumptions.[32] Differences along the factor are indexed by such variables as fertility, the proportion of large families, the youthfulness of the population, the proportion of single family dwellings. Factors showing high correlations with these indicants have been variously termed 'Family Status', 'Young family cycle', 'Progeniture', and 'Suburbanism'.[33]

Population scoring highly on the factor are characterized by many young children few old people and few unmarried adults, and occur in areas situated some distance from the inner city and characterised by single family houses. The more indicants are included relating to the demographic and family characteristics of the population. The more the single familyism factor tends to break up into a series of more specific factors relating to different age-group and different stages of the family cycle. In Calcutta, Berry and Reez report the female employment is related to the differences between Hindu and[34] Muslim areas rather than to Femilism. Where career norms apply to women in much the same way as they do the men, a separate female careerism factor may emerge.[35]

Sweester suggests that the increasing participation of women in the workforce, through out urban industrial society may presage the emergence of a career women factor as a general basis for the residential differentiation of the modern city. Variation in socio-cultural characteristi are also reflected in other linkages within the general set of family related variables. In some communities there is so little variation in types of dwelling that indicants relating to such phenomena as the proportion of single family structures or of new housing lose their discrimination power.[36] More generally, there appears

some tendency for the measures relating to housing characteristics to exhibit high correlations with a secondary family dissolution factor joining such variables as the proportion of unmarried, separated or divorced persons. Rather than a single familism factor the evidence suggest that it may be more realistic to differentiate a set of related factors all of which tap certain aspects of the familism realm but all of which also posses their own specific meanings. Whether the factors collaps into one or remain distinct reflects, both the set of indicants which are available and certain global socio-cultural characteristics of the society concerned.[37]

3.2.3 Ethnic Status :

The occurrence of factors reflecting the role of ethnicity in differentiating the urban population depends on the degree of homogenity in the community concerned. Although ethnic hetrogenity has been posited as a general characteristic of the modern city, some cities, notably those of Scandinevia, appear to be essentially homogeneous in their ethnic composition. More generally ethnic factors occur wherever is possible to mark off ethnically distinct population. As in the case of faminism cluster of factors,the more information is input relating to the diverse ethnic groups characteristic

of such hetrogeneous population as that of the United States, the more tendency there is for the unitary ethnic factor to split up into a series of distinct sub-factors reflecting the degree of assimilation reached by the particular groups concerned. In Chicago, Rees reports : Immigrants and catholic, Jewish and Russian, Irish and Swedes; other non-white and Italians, and Race and Resources factors.[38] In Boston Sweester differentiates between three distinct ethnic factors : non-white ethnic, Italian ethnic and Irish middle-class' factors. He also points out that in some analysis these distinct axes merge into a single biopolar factor.[39]

3.2.4. Other Dimensions :

Apart from these three major dimensions of spatial differentiation of households which are more or less universal, other more specific dimensions are also found. The most common among them are 'housing status', and 'mobility status'. Generally housing status is mixed up with the family status. But in cases where familism is not so prominent or more information regarding houses is input, there is found a dimension of housing status. In analysis which include such variables as movement rates, population change etc. a bipolar mobility stability' dimension is obtained. Except these two, many other

dimensions obtained in the analysis are generally specific socially and culturally, for instance, the traditional commercial communities factor in Calcutta.[40]

Examples of this later group include factors labelled 'size and density', community by car, and typical crime'. In the absence of comparable studies elsewhere it is impossible to generalise the significance of these factors.

3.3 VARIABLES SELECTED

Variable selection is not an easy task in the study of social well-being or residential or socio-economic status of any particular segment of space. It is traced from a vast study that in analysing socio-economic status, of people, primary indicators selected are generally in relation to the proportion of work force such as professionals, managers, proportion of non-manual workers, educationist and income level viz. proportion of population living above average value houses and vis versa are considered. Secondary part in analysing socio-economic status deals with the interdependence of social and economic variables and the proportion of own account worker, with which cast and community concept arises. In the same way in Family Status more and more emphasis is laid on the demographic structure of the population viz. fertility, proportion of never married, proportion

of widow and widower. And to highlight the high variables, indicators like women employment rate, single family dwellings owner occupiers etc. are choosen. Third important method of factorial analysis is the Ethnicity of the population which deals with the homogenity and hetrogenity and the degree of them in any community. For example, Scandinevian countries show a high level of homogenity in contrast to the hetrogenity of United States, where it is an important factor. In this 'race' and 'resource' factor persist. Mobility has also been included for factorial analysis very recently and material on mobility has been included for the diverse interpretation of the subject of 'residential differentiation'. Further mobility became a component of a construct called 'Urbanism' which bears much similarity to the non-family/ family dissolution factors.

The conclusion which can be reached is that intra-urban residential patterns vary greatly between the world regions. History of a country, its traditions, its ethnic and caste composition and its economic development have all gone into making the residential structures of cities what it is today.

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CHAPTER - IV
URBAN ENVIRONMENT : A CONCEPTUAL FRAMEWORK

* Quality of Life in Indian Context
* Geography And Territorial Well-being

CHAPTER - IV

URBAN ENVIRONMENT : A CONCEPTUAL FRAMEWORK

Human conditions in urban habitat have degraded throughout the world and the urban environment has become progressively less livable and less attractive to the present urban residents and to possible future migrants to urban areas as well.[1] The urban environment as a habitat of man is a complex form of hetrogeneous components. These are components linked by physical processes like climate, hydrography, relief, by biotic processes like vegetation, by technologies like urban transport network; and by social processes like organisation of population and distribution of goods and services. Thus the general inputs to the quality of urban habitat are of two types : natural and social.[2] In the case of natural, degradation of urban environment, it is human use or misuse of the naturally occurring elements that render the natural element a vehicle by which the degrading effect is spatially dispersed. As regard the socio-economic aspect of the quality of urban life, it is the impairment of the organisational and distributive systems by human being which causes vertical and horizontal inequalities in the access to and provision of the basic needs.

The qualitative degradation of urban environment resulting in social malise in the developed countries is the result of spontaneous and uncontrolled production with

almost no regard for compatibility with the environment and for the efficient use of energy.[3] The result is development of heat-islands, increase in the water and air pollution and high population congestion making urban habitat less livable. The spontancity and uncontrollability has also generated trend towards the differential accessibility to resources and services, realised at different levels of the utilisation. The quantitative degradation of the urban habitat in the developing countries is of different kind. It basically results from social pollutions as a consequence of scarcity, mass poverty and lopsided development. A high rate of urbanisation with a low level of urban development, disperity between urban population growth and rate of total development and a slow expansion of urban based industrialisation in the background of the mounting pressure on land in rural areas have resulted in the increased stress on urban amenities and services. In the conditions of socially stratified society lopsidedness of urban development has accentuated spatial inequalities in the quality of environment and new areas of qualitatively substandard conditions are added.

Quality of life is an assessment of all-round development of the human being. Welfare approach of the community and the society are not new but they are as old as the mankind itself. Quality of life has been a topic of common discussion among the sociologist, economist,

medicos and the geographers since the middle of the running century. Sociologist referred it to the satisfaction of needs and wants of the population. This immediately thrust upon us as what is meant by needs and how it should be measured. For each element of well-being (poverty, health, housing, etc.) an attempt can be made to define the minimum quantities and qualities that we can equate with needs, but these minima will vary according to prevailing value system and the norms. In the same way economic condition of people varies from each other depending upon the ability and the resource, so the meaning of quality of life also differs from region to region and time to time. 1960s has been regarded as the period of economists dominance in this field of study. After that humanistic concepts such as environmental quality, social well-being and the quality of life, became prevalent in geographic research in the 1970's. And since then geographers are seriously concerning the subject in a changing global scenario and men's awareness towards the environment. A brief discription of some of the scholars who have shown their keen interest in this field are as follows :-

Lewis (1968) The first of these studies is Lewis's approach to the regional geography of the north-eastern United States. Lewis used the concept of level of living as a means of analysing the population geography of the region. He operationalized it with a set of twelve

variables selected so as to reflect the characteristics of immigration, education, employment, housing, communication, political awareness, health and social stability.[4]

Wilson (1969) based his study on inter-state variations in the "quality of life" in the USA by basing his indicators on the domestic goal areas, listed in the 1960's report of the presidents commission on National goals. These were · status of individual, equality, democratic process, education, economic growth, technological change, agriculture, living condition, health and welfare, arts and science and democratic economy. A similar approach has been adopted in describing the geography of social well-beings.[5]

Flax (1972) has investigated the quality of life in eighteen large metropolitan areas of the USA using indicators based on fourteen quality categories, held to be relevant to American life. These indicators are only broadly similar in scope to Wilsons, although some of the differences can be attributed to the change in scale from the state to the metropolitan level. Air pollution for example is an important factor at the metropolitan level but becomes less meaningful at the state level. The list of Flax quality categories includes Unemployment, Income, Housing, Health, Public Order, Racial Equality, Citizens participation, Educational Attainment, Air quality and Social disintegration. But an examination of the fourteen indicators used by Flax revealed that there is no

consideration implicit or explicit of important factors such as residential quality, recreational opportunity and social-welfare.[6]

Gordon and Whittaker (1972) in Britain has developed indicators of 'prosperity' for local areas in the south-west region. Doubting whether there is any real agreement as to the relative importance of various aspects of prosperity, Gordon and Whittaker followed a compromise approach to its measurement. First,on the assumption that average income per head provides the most useful single indicant of prosperity, attention was concentrated on its spatial distribution. Secondly recognising that there are other important dimensions of prosperity that out not to be ignored, they attempted to identify these dimensions through a multivariate analysis of variables representing as many aspects of economic and social well-being as possible within the range of available data.[7]

Dalkey and Rourke (1973) have applied a procedure known as "Delphi" (consulting the oracle) to identify group value judgements with respect to what determines the quality of life. A sample of college students were asked to list items by considering most important to their sense of well-being, satisfaction or dissatisfaction with life or happiness. Similar items were grouped into general components, which were then weighted by the participants. The most important included " Loving, caring, affection" and so on. The second (caring) stressed self-respect,

while the third encompassed peace of mind and emotional stability. Fourthly came the sex.[8]

Harvey (1973) suggests that the needs associated with different elements of well-being may best be determined in different ways. Thus it may be best to determine consumer need through relative deprivation analysis, housing needs through statistical analysis, and medical core needs through resolution of expert opinion.[9]

Smith (1973) has analysed the content of ten major works from the social indicators movement and ten text books from the field of social problems. From these it proved possible to arrive at a broad concensus about well-being : In a well society people will have incomes adequate for their basic needs of food, clothing, shelter and a reasonable standard of living; people will not live in poverty. The status and dignity of the individual will be respected, and he will be socially and economically mobile. Good quality education and health services will be available to all and their use will be reflected in a high-level of physical and mental health and in an informed populace able to perform their societal roles in a satisfactory manner. People will live in descent houses, in descent neighbourhoods and will enjoy a good quality of physical environment. The society will show a low degree of disorganisation, with few personal social pathologies and the individual will be able to

participate in social, economic and political life and will not be alienated on the basis of race, religion, ethnic origin or any other cause. Using these ideas as a foundation, Smith lists seven general criteria of 'social well-being' - income, wealth and employment; the living Environment (housing, physical environment, the neighbourhood); Health, Education, Social Order (crime, public order, family background, personal pathologies); Social Belonging (democratic participation, criminal justice, segregation); and Recreation and Leisure which serve as a basis for operational definitions that are subsequently used to determine how social well-being varies spatially at three levels of resolution - interstate, inter-city and intercity within the United States.[10]

Apart from all the above mentioned definition s of quality of life a concise and satisfactory definition has been given in the UNESCO Report of (1977) which revealed it as "the satisfaction of an inclusive set of human needs", quality of life is an inclusive concept which covers all aspects of living including material satisfaction of vital needs as well as more trancedental aspects of life such as personal development, self realisation and a healthy 'ecosystem'.[11]

Bhardwaj and Wilkening (1980): The recognition that the economic, health of a nation is not synonymous with

individual satisfaction and well-being had led to the development of social indicators to assess individuals quality of life..... The new emphasis is on the monitering of change in goals, values, attitudes and satisfaction that affects individuals life and nations. The overall thrust appears to be the development of a set of dependent variables.[12]

Land (1983) goes on to suggest that from the stand point of generating theory of social change, it is not clear that satisfaction ideas are the most desirable subjective indicators as opposed to values aspiration, or expectations, nor is it clear that satisfaction indexes provide an unambiguous criterion for the formulation of public policy.[13]

Mukherjee (1989) notes that quality of life, researchers employ several dichotomies such as quantity and quality behaviour and perception and objective and subjective indicators. He argues - "Economists and planners are almost exclusively concerned with behavioural research on the basis of quantitative variables to improve the quality of life of the people. In that context they ignore qualitative variations in the appraisal of a better quality of life or treat these variations as introducing a classificatory distinction in the field of enquiry. They also equate the individualwise subjective perception of reality to a groupwise objective perceptions by experts. Their

appraisal of social reality in this manner leads them to formulate what the people need in order to improve their quality of life. The whole synthesis of Mukherjee on social-well being is need based.[14]

George (1989) social gerontologist have instead concentrated on predicting narrow dimensions of well-being such as psychological distress and depression and the increasing employing a life course perspective that involves examination of main and interactive effects of stress social support and related factors.[15]

Now a days various measures of life satisfaction and social well-being are more amenable to intervention are the indicators of physical health increasingly being studied from a life course perspective (Murkides and Cooper, 1989).

Quality of life in Indian context :

In the context of poor countries like India, where scarcity is prevalent, has an added disadvantage of simplistic interpretation of quality of living by not recognising significant distributive inequalities. The second alternative is to analyse factors which generate needs, but it is not possible as relationships between factors and different categories of needs are not fully known. The evaluation of need in terms of consumer behaviour is another alternative as demand of goods and

services reflect unfulfilled needs. This alternative is particularly not applicable in the situation of the developing countries.[16] The most elementary amenities of municipal services such as drinking water and sanitary facilities not to speak of other public facilities. In these conditions and whose plight is meagre livelihood, people do not feel deprived or lacking in amenities and facilities, which other people are enjoying, as they do not hope and improvement of their lots. So if not in the conditions of the developed world, then positively in the situation of the poor countries, the concept of quality of life becomes a "vague and etherial entity.[17]

There is considerable amount of research on urbanization in the developing world. These studies have been by and large concerned with socio-economic and technical changes taking place in the urban centres. Though some attention has also been paid to the environmental degradation and quality of life but these investigations have been few and inadequate. Moreover they have very often failed to explain residential characteristics in relation to the environmental quality. It is the first innovations in geographical investigations, and there are virtually no studies of quality of life in Indian cities.[18]

The first basic framework of the environment in which man live is his house. Housing condition not only

reflect the material status of the population, but also the rate at which improvement or deterioration of general quality of life take place.[19]

Fakhruddin relates five sets of variables and they are as follows :

- Material Status
- Health and Nutritional Status
- Cultural Level
- Housing standards, and
- Territorial stress.

In recent years community level studies have dominated research on quality of life. The study established a model of comprehensiveness that has been followed by popularised non-technical studies of the early 1980's. Although the places Rated Almanac (Boyer and Savageu, 1985) is best known. Other comparative studies include Bowman et al. (1981), Conway and Liston (1981), and Marlin and Avery (1983). The success of the places Rated Almanac has attracted scholarly scrutiny, with some author recommending minor version to its methodology (Loftus, 1985), Pierce (1985), Cutter (1985) and Wish (1986) have all called for subjective data to justify priorities merely assumed by the comparative studies.[20]

Assessment of the quality of life is not an easy task and there are problems in identifying and measuring

relevant indicators, their grouping and comparisons. There are two developed dimension of analysing the quality of life-subjective and objective.

'Subjective Variables' of quality of life may be important in the western world where a majority of the population enjoys a fairly high standards of living, but in conditions of objective poverty prevailing in the developing countries, they may not be so important.[21]

'Objective indicators' are generally defined as counts of various types of phenomena, such as levels, income and education, residential densities and employment figures. They are most often regarded as quantitative 'facts' selected from census data and other accessible official registers, but this may not always be the case.[22]

Subjective indicators are generally defined as being based on direct reports from individuals about their own perception and feelings to obtains a direct measure of the quality of life of people concerned, a questionnaire survey is presupposed.[23]

Geography and Territorial Well-being :

The output of a regular system of measurement of territorial well-being would be useful not only for socio-geographic management but also for teaching and research in geography. It would be especially relevant to

the 'problem solving' and socially relevant approach to geography that has emerged in the 1970's. That such an approach is desirable is not universally accepted. There are some quantitative geographers who find in it an unacceptable degree of subjectivity, whilst to others it threatens the tradition of academic objectivity and detachment (Trewartha, 1973). But the techniques of the 'new geography' having established their utility in the 1960's, now needed to be directed towards substantial, real world problems if they are to fulfil their potential. As to the question of academic detachment, the acceptance of spatial variation in well-being as the focal-point of geographic enquiry, requires no dedication to the promotion of social change, or to leftist politics. It simply requires recognition of what is surely the self-evident truth that, if human beings are the object of our curiosity in human geography, then the quality of their lives is of paramount interest (Smith, 1973b, 112).

If this is the case, the first task of a socially responsible human geography is the accurate portrayal of spatial variations in well-being. But as soon as attention is concentrated on these variations, ethical questions arise which can easily be avoided. Mapping inequable distributions is bound to raise the question of whether not they are just. Harvey (1972a) has examined the idea

of territorial distributive justice in detail, pointing out that the justness of a given distribution depends, in first instance on the criterion of distributive justice to be applied : equality need, achievement etc. Assuming that it is possible to decide upon an appropriate, or desirable criterion, the geographer faced with an unjust distribution must decide whether he is under an obligation to help society to improve situation. Traditionally it has been sufficient, to describe and explain the situation, without becoming further involved. Recently, however, Harvey (1972b, 73) has vigorously and persuasively led a growing lobby for greater commitment among geographers to spatial social justice, a commitment which is explicitly directed towards revolutionizing socieities which tolerate and perpetuate these injustices, and a commitment which also demands a 'revolution' in geographic thought, whatever the preferred balance between relevance and revolution; territorial social indicators of the sort described an illustrated in this study can play an important role in awakening more people to the extent of spatial disparities in well-being and, it is hoped, promote a more active involvement in social reforms.[24]

Social wellbeing and the quality of life are not new concepts, scholars from different streams of studies have shown their interest since the mid of the 20th century and they have thrown shower of light from various corners of social sphere. More or less they emphasised on, health, habitation, human skill, economic attainment and so on so for. But now leading to the same notion a new concept has emerged, which is wholistic in nature and welfare in approach to the men and society, in the realm of physical and social environment. Now a day it is assumed that the earth and any patch of the earth in any form of human habitation has an ability to carry on the, form of human burden beyond which they or the segment of space can not carry, and going beyond this limit must be considered as a challange to the physical and social environment which may prove desastrous to men and the living being simultaneously. In this way every step of men seeking development should be ecofriendly as a result of which dream of the sustainable development comes true. Researchers are keen to develop human habitation inharmoney with the environment, which would minimize the natural vagaries and cuts the cost of its after effects. Quality of life and the concept of social wellbeing varies spatially. In the highly industrialised western countries it is the fulfilment of high level aspirations, while in developing countries and in India, it is just the provision of minimum and basic amenities and facilities.

Recent phenomenon developed in geographical study is spatio-environmental, in which any part of the surface of earth is considered in association with socio-temporal elements as a whole and man-environment relationship is analysed to know the degree of harmoney between the two.

Twenty first century would be the period of great environmental renaisance in which every thing would be treated in an eco-friendly realm. So studies related to the urban people and urban habitation are going side by side parallel.

Habitat - I was the follow up of the first environmental conference in 1972 at Stockholm, which revealed that the topic of human environment must be discussed in association with the human settlements, because the two are closely connected. Rapid population growth combined with unsustainable agriculture and slow urban based industrial growth has made urban areas repositories of people unable to provide themselves with the minimum needs for a descent existence, which includes access to food, housing, sanitation and education. Due to rapidly deteriorating urban environment at least 600 million people all over the world, in human settlements live in life and health threatening situation.

Habitat-II conference held in Istambol in 1996 has emphasised on sustainable human settlements in an urbanizing world and adequate shelter for all. Water has remained a priority issue at this conference. The 'Earth Summit' Agenda 21 Programme of

Action will fail, if the cities environmental agenda of pollution, inadequate sanitation, water supply and waste management is not addressed. This has been recognised by the local authorities all over the world. Sustainable development in the twenty-first century will depend upon how cities, towns and villages are growing in harmony with the environment to utilize natural resources. Council for Social Development organised a symposia on urbanisation and slums in Calcutta in April 1993, in which emphasis were laid on urban basic services, health and nutrition, urban slums and strategies for the future. In his most provocative paper of the conference Bhaskera Rao, has stated that the process of urbanisation and the process of development are interdependent and urbanisation needs to be sectorally and spatially balanced, so that the quality of life and environment is maintained. Recently and very recently in our country, it was in persuance of this goal, the Prime Minister, Mr. Deve Godwa, convened a meeting of the Chief Ministers on Basic Minimum Services (BMS) which includes the provision of safe-drinking water, primary health care universalization of primary education, public housing assistance for shelterless, road connection to all habitions and streamlining the public distribution system to families below poverty-line.

In the light of all the above mentioned discription of the theme, it has undoubtedly been extracted that the

quality of life in our towns, cities and mega cities needs improvement. And in a poverty striken country like India, study in relation to the urban life must be carried on, in an spatio-environmental and urban infrastructural perspectives. Indian cities showsdirty and dark faces where basic infrastructural scarcity of health, housing, drinking water, electricity, sanitation and transportation still exist. In the absence of these fundamental requirements urban region changes into a hazardous collection of houses. Social and cultural development are also defined as technological development which includes the quality of man-made implements and structures and the level of urban structure of which man is a component. Man made structures sanitation, means transportation, water supply, housing and education and not only this but also the quality and quantity of its availability. Further the study deals with the phenomena related to the houses in association with all the above mentioned elements which originates the concept of "Urban Residential Environment" . Here urban Residential Environment is a wholistic concept in which the use and availability of man-made structure for the betterment of the mankind is coordinated against the population. Systems like transport and communication, health and housing, water supply and sanitation etc. are sub-set of a set i.e. Residential Environment.

The approach of the urban planner municipal corporation and the government must be goal oriented, and at least all the basic facilities on any urban plateform must be provided to all in a city region. So that the quality of city or city environment could easily be analysed by examining the level of residential structure of any particular urban segment in association with the man-made city environment.

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CHAPTER - V
BHAGALPUR : GENERAL CHARACTERISTICS OF THE ENVIRONMENT

Bhagalpur :
General Characteristic of
The Environment

CHAPTER - V

BHAGALPUR : GENERAL CHARACTERISTICS OF THE ENVIRONMENT

Bhagalpur is no better than any other big city of the northern India. Though it is not an industrial city, yet unemployment in smaller towns of the state and pressure on land in the surrounding countryside causing migration towards the city have resulted in the rapid growth of its population. Consequently, in the absence of equally rapid developmental efforts towards urban infrastructure and amenities, the quality of urban environment has progressively declined in this city.

The first and basic frame of the environment in which men lives is his house. Housing conditions not only reflect the material status of the population but also the rate at which improvement or deterioration of general quality of urban environment takes place. According to the census of 1991, there were 40,375 households and 29579 occupied residential houses in Bhagalpur. Accordingly there were 10796 units shortage of the requirement. The unsatisfactory conditions of housing become still more apparent, if the population per house is considered which gives figure of more than six persons per house. Full implications of this ratio emerge when it is noted that the proportion of population living in houses having more than three rooms is only 19.7 per cent. This means that over 80 per cent

population is living in two and one room houses. Because of the accelerated pace of urban growth, the demand for housing is increasing fast and pressure on existing dwellings is multiplying. The shortage of housing in Bhagalpur is the result of historical development of the city. In earlier times housing was mostly a private venture. Even some of these private houses were constructed for accommodation of government officers and fetched good rents. However, implementation of the Rent Control Act at a latter stage, conferring certain power to government machinery for alloting the accommodation and fixing the rent, discouraged private investors due to low rent, fixed and lesser incentive available to them.

With the shortage of housing, density has increased. Due to the natural growth of the family and immigration, open spaces around the dwellings have disappeared. The result is housing congestion and a veritable human heap. This is particularly true of the inner or old parts of the city. The house density in the inner parts reaches a maximum of 275 house per hectare while it is around 175 in other old parts. On the contrary, in the outer zone or in the new parts of the city it reaches the lowest value of seven houses per hectare and is now here, more than fifteen in these areas. As a consequence of discrepancy between the population growth and the rate of housing construction the already existing structures are forced

to lower their standards in order to meet the overcrowding. Another trend of development is caused by the influx of the rural population. This population with its rural way of life and habits and meagre income is unable to pay the rent for a suitable accommodation and srarts living after erecting Jhugi Jhopris (flimsy hutments) on any public land near to their work centre. As a result slums are developing in the inner and outer zone of the city. It is interesting to note that the old city generally has two or three storied buildings, but the population concentration is the highest in this area. This area has highly congested localities where the density per hectare is as high as 1137 persons.

Bhagalpur is poor in terms of infrastructural facilities which constitute an important part of the environment. These facilities vary both in quality and quantity over space. There is a total length of 316 km of roadways in the city, Of this about 30 per cent are Kachcha roads (unmetalled). The total road length gives a density of 10 km per sq.km. of the city area. This is indeed a moderate value by any standard. The situation is critical in the inner area of the city. In this area due to congestion building extension or improvement of road system is impossible and the problem of parking is serious. Traffic jams in the city centre particularly in the market area are common experience. Public transportation is one of the most vital problems of the city due to its vast

spread resulting in great distance between different areas of the city. Public transportation corporation and private transportation put together are far from adequate and are unable to meet the demands. Long lines of people waiting for long, especially in the peak hours bear ample testimony to the helplessly insufficient transportation facilities.

As regards the water and electricity supply, the situation of the city is not satisfactory. Spatial distribution of these facilities may at best, be put as haphazard and discriminatory. Due to low income, a majority of the population can not afford these facilities. Moreover, the development of these basic amenities is lagging for behind the growing demand. In the inner and outer residential areas poor people continue to use oil lamps and depend for water supply on public hydrant which are very few and far between and on wells, ponds and rivers. It is found that only 43 per cent of the total households are supplied with protected water.

In the case of electric supply it is found that only 45 per cent population benefits from it, i.e. only 18170 households have domestic electric connections. The condition of road lightening is still poor. There are about 12640 points which considering the area of the city give a density of almost 190 points per sq.km. While considering road length, a density of almost 40 points per km is obtained. The two figures point out a low

level of development of road lighting system. Besides being inadequate the distribution of this amenity is as unplanned and unsystematic as that of any other public facility. Even a casual observer can note that road lamps are abundant in the Civil Lines and other high class residential areas and non-existent in the outer slum areas.

The sewerage and sanitation facilities,one of the vital elements of the quality of environment is very unsatisfactory. Stagnant pools of water, and flooding of low lying residential areas by rain water are a common sight. Drainage system is non-existent in the outer poor residential areas and is very poorly developed in the inner areas of the city. Disposal of household refuse and garbage also presents a problem. Heaps of garbage in residential localities is a familar sight, septic tanks are rare. Human excreta and piles of various roadside is a common sight. There are about 19300 latrines in the city. Of these 4800 are water borne while remaining 14500 are traditional open. service litrines which are generally source of many diseases. The enormity of the problem, emerges from the fact that only 70 per cent of the population has this facility and out of this a majority have to share latrines with other households. An appreciable part of the population does not have even such a facility. One can well imagine the effects of this unhygienic situation on health.

The quality of life is also determined by the open and green areas in the urban environment. Bhagalpur, due to the lateral expansion of the builtup area open and green spaces are largely disappearing. Green spaces, parks are rare in and around the city centre where most of the population lives. However, on the outskirts and sub-urbanised zones there are open, green as well as wooded areas. There are at present 10 big and small parks in the city. The total area covered by 120 acre that forms a small friction (2.25 per cent) of the city area.

The quality of life of a settlement is also related with the degree of development and spacial distribution of public facilities over the city, reveals that schools, medical centre, and places for recreation and leisure facilities are unevenly distributed. Educational institutions including nurseries and schools are neither adequate in number nor in a satisfactory condition. There are about 110 nurseries and primary schools, 15 junior secondary schools and 29 high schools. The number of existing nurseries and schools are not sufficient with regard to the school going population. Most of the schools are located arbitrarily in the city, inappropriate and old buildings. In some schools the minimum requirements of equipment and teaching staff are not available. Of these almost 80 per cent schools are run by the municipal board, most of which are situated in the old and central parts of the city.

The medical facilities are also lacking. In this city of almost 255 thousand population, there are only 45 hospital and dispensaries including a medical college. These medical units have 850 beds. Almost all the wards of city have some sort of medical facility, but these facilities are far short of the demand. On an average there are five medical units and 80 beds per 25000 population. It is interesting to note that medical facilities instead of being located in the inner zones,where they are most needed show a tendency towards their location in outer zones.

Like medical facilities recreational and leisure facilities as cinema halls, hotels and restaurants are unevenly distributed and concentrated in the outer zones. There are 10 cinema halls and 200 hotels and restraurants. The number of these establishments as well as their standard is low. It is interesting to note that standard cinema halls and restaurants are situated in the peripheral areas and in the administrative zone of the city. The hub of the city has few and inadequate recreational and leisure facilities.

It clearly emerges from the above study that urban environment in Bhagalpur has degraded and that housing, city infrastructure, civic amenities which condition the urban environment, show spatial disparities in their distribution. The contrast between the city core and high

class peripheral residential areas is striking. But differences between densely populated areas themselves are quite remarkable. The old over-populated central part degenerating into slums, the old middle class residential area around the core showing a moderate level of public amenities and infrastructure, the Civil Lines and adjoining privately built colonies housing professionals having abundant amenities, densely populated squatter colonies and slums on the outskirt lacking in all or many facilities - all these present the picture of disparities which need careful examination and analysis.

CHAPTER - VI

PROPOSED PLAN OF WORK

* Research Design
* Methodology
* Data and Sampling
* The Problem of Scale
* Technique of Analysis
* Factor Analysis
* Organisation of Work

CHAPTER - VI

PROPOSED PLAN OF WORK

6. Research Design

Urbanisation trends in India unmistakably show that the urban environment is fast becoming the habitat of increasing population and that the quality of this habitat is increasingly deteriorating. Planning for the decent living in urban areas poses certain questions : (1) How is the population organised over urban space ? (2) What are the spatial patterns of disbalances in the provision and requirement of basic amenities, public facilities and other resources? and (3) How these inequalities in the quality of living are related with the residential patterns of the population? The present research project addresses these queries in the specific case of the city of Bhagalpur.

The analysis of 'quality of life', which depends on the quality of environment, in the context of residential structure falls in the domain of 'urban ecology'. This approach till recently had been employed to inquire into socioeconomic structure of urban populations and their residential distribution within urban areas. These analyses are based on the matrices which contain information regarding population's socioeconomic characteristics, housing conditions and a few other relevant variables of urban life by small areas within the city. Basically

they have been concerned with the way in which small areas within a city differ with respect to the socioeconomic attributes of the residents, or with the way in which population groups differ in their locational or spatial patterns. They generally show a lack of concern with the way in which population groups differ over city space with respect to the quality of general living conditions with the exception of quality of housing. However, many a recent study under the head of 'factorial ecology' and 'quality of life' of 'levels of living' has extended tangentially this approach to explore conditions of life in cities with respect to the local residents in small areas.

6.1 Methodology

Operationalisation of this approach implies application of statistical models to the empirical situation. The problem at hand, which involves analysis of a large number of relationships, essentially lies in the realm of multivariate statistical analysis. However, application of these methods and techniques involves certain issues. These are connected with the availability of data, unit of analysis and techniques of analysis. Following sections consider theoretical and practical aspects of these issues.

6.1.1 Data and Sampling

A large number of variables containing information with regard to population characteristics and conditions

of life are used in this analysis (Appendices A and C). There is no single comprehensive source of required information. Even Census of India despite its long history gives population statistics at a very rudimentary scale on the city sub-area level of ward. The information available in census tables relates to population size, sex composition, scheduled caste and scheduled tribe population, literate population, number of households, breakup of workforce by broad nine industrial categories, and number of occupied residential houses. This has made the writer to explore other sources like government and quasi-government offices and agencies which collect and maintain statistics on population and other aspects of city life.[1]

However, these sources are not sufficient to provide the required information particularly relating to socio-economic status and housing conditions. Therefore, a five per cent sample survey was conducted. The unit of survey was a residential building rather than a household,[2] as the purpose of study is to analyse household characteristics as well as conditions of dwellings which form the immediate environment in which population lives. The sampling procedure adopted can be described as somewhat stratified random, stratum being a mohalla.[3] The city is divided into 584 mohallas. From the house list of a mohalla, five per cent houses (ignoring their subdivisions) were selected at random using random numbers. The households of these

houses were asked questions and their responses were recorded into three slips : individual slip, household slip. The information obtained was aggregated at ward level for analysis.

The information obtained through sample survey and other sources is for 1980 except the information obtained from the census that refers to 1971. The variables were chosen as indicators of residential patterns and quality of life. The variables related to the residential patterns were chosen to indicate socioeconomic status, family status, ethnic composition and housing status of the population. The variables selected to describe quality of life were indicators of material well-being, health and nutritional status, cultural level, housing standards, building standards, territorial stresses, and spatial congestion. In order to compare wards, the absolute values of variables were not deemed appropriate and therefore were transformed into percentages and ratios.

6.1.2 The Problem of Scale

The problem of scale in geographical analyses by virtue of its generalisation in terms of area relates to the selection of appropriate units of analysis. The issue involved is not as much of spatial autocorrelation as that of level of areal aggregation. Robinson in the context of "ecological fallacy" has pointed out that the

extent and sometimes even the direction of relationships among variables may change with varying size of unit of analysis.[4] Similar observation is made by McCarty, Hook and Knos, 'Every change in scale will bring about the statement of a new problem, and there is no basis for presuming that associations existing at one scale will also exist at another.[5] Generally it is suggested that smaller the unit of analysis, lesser the distortion of reality. Despite the broad truism of this axiom, scale is subject to restrictions in both upward and downward directions. Observation of characteristics and relationships over large areas runs into the risk of over simplification and fallacious averaging of reality, whereas smaller units of analysis pose the problem of fragmentation as processes and relationships may cross their boundaries.

The soundness of a geographic analysis, therefore, depends on the extent to which a territory is subdivided and the criteria which is adopted for such a division. But such analyses usually proceeds with the data collected by administrative apparatus for predetermined administrative units which show no criteria in their division and aggregation other than physical propinquity. Therefore, they lack homogeneity in size and composition, and very often reflect variance in the details of available information at every level of aggregation. This problem was very strongly felt in the present study. Considering equality

of size and homogeneity and continguity of the socioeconomic and physical composition, mohalla can be considered as an appropriate unit of analysis. But unfortunately, despite collection of information at mohalla level through sample survey, most of the relevant information obtained from various offices was available at the ward level. The paucity of information at mohalla level and limitation of time and fund at disposal had compelled the author to select ward as the unit of analysis. However, the ward as basic organising unit of the most of political administrative and cultural activity can be considered as a viable unit of analysis.

6.1.3 Techniques of Analysis

The scientific inquiry starts with the classification of observations into categories which allow 'the discovery of many more and more important resemblances than the originally recognised.[6] These categories or constructs can either be theoretically defined or can operationally be constructed. Appropriate operational techniques for this task are found in two research traditions in geography : multivariate regionalisation and factorial ecology. The methodology of multivariate regionalisation has developed and spread rapidly after the publication of Ginsburg's Atlas of Economic Development.[7] Many an earlier attempt has employed simple additive techniques involving ranking and classification of indicators according to some theoretically determined criteria.

Later this methodology has been modified under 'social indicators' approach that reacted sharply to the over emphasis on economic criteria as the measure of human well-being. As a result, more and more social indicators have been incorporated in the regional analysis of the development. Since the relationships among these varied indicators of development have become uncertain by now, procedures of standardisation have been adopted so that transformation of indicators may entail their addition into various categories of the development. Smith provides an excellent example of this procedure.[8]

Methodology of factorial ecology developed in early 1960's has come out of an older tradition of social area analysis in urban geography. Social area analysis defines theoretically the categories by which differences in the population groups can be analysed over the city space. These constructs as defined by Shevky and Bell are social rank (economic status), urbanisation (family status) and segregation (ethnic status).[9] According to them, these constructs reflect societal change from one scale to another scale. On the other hand factorial ecology employs a variety of mathematically rigorous methods of factor analysis to reduce a large number of socioeconomic and environmental indicators into a few underlying dimensions. Unlike the methodology of multivariate regionalisation and social area analysis which structure variables according

to some theoretical constructs, it allows the constructs to emerge from the interrelations of the variables themselves. It starts with the matrix of intercorrelations of original variables from which such a set of smaller number of variables is derived that reproduce original relationships with the restriction that derived variables are independent (orthogonal) of each other. By combining standardised original variables and their loadings on computed variables (factors), original variables may be aggregated to exhibit regional distribution of the new variables.

The methods of classification of variables into major dimensions in the two traditions have their relative advantages. The additive methods involve simple calculation and there is little ambiguity involved as all the subjective elements are usually known and made explicit. Moreover, since they imply no assumption of orthogonality of categories or dimensions, relationships among them may be evaluated and analysed. Such methods of classification are quite valid, if theoretical constructs are acceptable and addition of the variables is legitimate. However, assignment of equal rank-difference to varying magnitudes of a variable results in considerable loss of information. Standardisation procedure usually that of normalisation of distribution overcomes much of the loss of information. Nevertheless, simple addition without giving consideration

to the significance of the constituent indicators of a category cannot represent a major part of the reality. This problem is largely solved by the factor analysis because the loadings of variables on a factor (category) are their weights which are derived from their factual inter-relationships. But factor analysis procedure starts with a solution which is not mathematically unique.[10] Therefore, there is no assurance that factors obtained would conform with the theoretically relevant or most important aspects of the reality. Generally, apart from the first factor that is understood as an overall index, all other factors remain uninterpretable. Hence, factors are subjected to rotation to some theoretical criteria to make the factor structure more interpretable.[11] But at this stage problem becomes more complex. Factor loadings though remain orthogonal, factor scores do not. Thus, at the final stage of this analysis ambiguity is involved in the interpretation of regional patterns of various dimensions.

Social change and associated ecological processes in the developing city are relatively little understood. Application of any set of theoretical constructs developed in the Western world may lead to false findings and erroneous conclusions. Transformation of societies is the historical and cultural interpretation of the processes of change and does not follow the same course. For instance, constructs of the social area analysis as developed by Shevky and

Bell are based on the historical interpretation of the process of change as it occurred in the Western world. Shevky and Bell conceived of social change as a concomitant of increasing societal scale which in itself resulted from changes in the structure of productive activity 'from agriculture to manufacture, and from manufacture to commerce communication, transport, and service'.[12] But in the developing countries hypertrophy of urban tertiary sector does not conform with the urban levels of social and economic achievements.[13] In the case of India, Schwartzberg does not find any strong relationship between level of development and the size of tertiary employment.[14] Moreover, despite an observed trend towards homogenising personal life in cities, it is noted that transformation of a traditionally caste ridden society in India into a modern class society is rather confused and cannot be fully explained with reference to any conventional theoretical model.[15] In the conditions of little understood specificities of urbanisation in the developing countries it is, therefore, safe to use such techniques of analysis which themselves develop analytical concepts and categories. Hence, the present study has employed the technique of factor analysis to derive 'meanings' from virtually 'unstructured' variables.

6.1.4 Factor analysis

Factor analysis has generally been used for the purpose of discovering as to how much of the total

variability exhibiting the primary variables can be accounted for by a few orthogonal variables. In reality factors are underlying dimensions of primary variables. The model involves an 'orthogonal' transformation of a set of variables X (x_1, x_2,.... x_n) into a new set of variables Y (y_1, y_2,.... y_m) being uncorrelated with one another, not with standing the factor that original variables, X (x_1, x_2,...., x_n), may have been highly correlated. The prohlem is to find a matrix F such that :

$$R = FF^T +$$

where, R is the correlation matrix of X and = diag. (s_1^2 , s_2^2 ... s_n^2) and $1-s_i^2 = r_{ii}$ is called communality. The Matrix $R^* = R -$ is called reduced correlation matrix. The fundamental equation of factor analysis is thus

$$R^* = FF^T .^{16}$$

The essence of canonical correlation technique is to transform two mutually dependent sets of variables X (x_1, x_2,... x_p) and Y (y_1, y_2,... y_q) into a new orthogonal pairs of canonical variates U and V so as to maximise the correlation between certain variables of X and Y sets while others of these correlations are reduced to zero. Hetelling suggested that a linear of X, say $X^* = UX'$ and another of Y, say $Y^* = VY'$, and the co-efficient U and V are determined, such that the maximum correlation between X^* and Y^* is maximum, the maximum value of correlation , called maximum canonical correlation. It

can be shown that ^{2} is the dominant latent root of matrix $|_{pp\ pq\ qq\ qp}|$ or equivalently, the maximum root of the determinantial equation $|_{pp\ pq\ \ pq\ \ \ pp}| = 0$.[17]

where, $_{pp\ pq\ \ qq}$ and $_{qp}$ are within and between group co-variance matrices of X and Y.

The statistical methods outlined above are of great value in an investigation which has to go through a lot of data processing and computation. The factor analysis may be used to reduce a large number of variables on the characteristics of work force into few underlying dimensions which without a significant loss of information, can depict well the trends in those characteristics. Factor analysis is also great assistance in mapping the spatial distribution of correlated phenomena. Instead of maping a large number of variables, few underlying dimensions can be mapped representing spatial variability of all the variables. The cannonical correlation technique is generally used in the situation where the investigator wants a priori ascertation of correlation between two mutually dependent sets of variables before going into details of relationship. In the present context before going into details of nature and intensity of relationship between the components of workforee and its socio-economic and demographic co-variates, it can be ascertained whether there exists any significant association between the two sets or not.

Despite their all validity, noneof these methods is helpful in driving multi-factor uniform regions. Since, the problem of regionalization in geography is analogous to the classification problem in all behavioural sciences, geography is greatly benifited by the developments in these sciences, particularly by the developments in biometrics and anthropometrics. No standard method of regionalization is developed so far. Many a classificatory algorithms are being used for this purpose, especially those developed by Sokal and Michener[18], Edwards and Cavalli-Sforza[19] and Fisher[20]. All these algorithms start with the computation of a matrix of 'similarity' co-efficients which are not more than straight live distances between points given by the formulae :

$d_{ij} = \quad (P_{i,r} - P_{j,r})^{2\ 1/2}$. Then they try either, to minimise the sum of squared distances within groups or to maximise the sum of squared distances between groups. But, their application is limited to the small samples. Large samples cannot be vigorously and precisely divided into groups by these methods. Besides, factor of memory and time requirements by the computers is involved when these techniques are applied to large samples. On this ground they have proved a total failure.[21] However, it is possible to develop a method of regionalisation which can overcome these limitations.

6.2 Organisation of work

This brief and broad outline of the methodology summarises the statistical procedure that will be adopted for the work which will be organized on the following plan :

Introduction

Chapter I The Historical Setting

- 1.1 Physical Setting
- 1.2 Historical setting
- 1.2.1 Origin of the Town
- 1.2.2 Early History
- 1.2.3 Medieval Period
- 1.2.4 The Twentieth Century
- 1.2.4.1 British Period
- 1.2.4.2 Post-Independence Period

Chapter II Demographic and Economic Structure of Bhagalpur City

- 2.1 Population Growth
- 2.1.1 Population Growth and Distribution During Post-Independence Period (1951-91)
- 2.1.2 Community wise Distribution of Population
- 2.1.3 Population Characteristic during Post-Independence Period (1951-91)
- 2.2 Economic Characteristic of the Population
- 2.2.1 Working Force and Work Participation Rates
- 2.2.2 Occupational Structuring of the Population

Chapter III Residential Structure of Bhagalpur

- 3.1 Residential Patterns

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2. The large residential buildings of multiple housing units constructed for the business purpose are rare in the city. Therefore, a sample survey taking residential building as a unit of observation does not run into risk of disproportionate sampling and bias in favour of any population group.

3. A mohalla in north Indian city is equivalent to the concept of neighbourhood or local community in the Western city. Generally, people of the same caste or religion and more or less of the same socioeconomic status live together in a mohalla. Even in case of caste and religious difference among the local population, people of a mohalla behave like a community and have strong socio-cultural relations. This is evident from the fact that at the occasion of marriage or death the entire population of a mohalla assembles together to cheer or mourn.

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Appendix - A

Variables of Residential Structure

Variable set	Variable subset	Variables
Socioeconomic status	Income	1. Median Income
		2. Percent household with less than Rs. 5,000 income
		3. Percent household with Rs. 5,000-10,000 income
		4. Percent household with more than Rs. 10,000 income
	Education	5. Percent female literacy rate
		6. Percent School enrolment
		7. Percent College enrolment
		8. Percent Professional enrolment
	Occupation	9. Percent Professional
		10. Percent managerial
		11. Percent clerical
		12. Percent sales workers
		13. Percent service workers
		14. Percent Craftsmen
		15. Percent other workers
Family status	Demography characteristics	16. Fertility rate
		17. Sex ratio
		18. Percent productive population
		19. Dependency ratio
		20. Immigration

	Households	21. Average size of households
		22. Percent households with less than 4 persons
		23. Percent household with more than 6 persons
	Women in the work force	24. Percent female work participation rate
Ethnic status	Religion	25. Percent caste Hindus
		26. Percent Muslims
	Caste	27. Percent others
		28. Percent Scheduled caste
Housing status	Tenure	29. Percent renter occupied
	Housing size	30. Percent dwellings with one room
		31. Percent dwelling with less than four rooms
		32. Percent dwelling with four rooms and above